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ENVIRONMENTAL ASSESSMENT BOARD



ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARINGS

VOLUME: 76

DATE: Tuesday, October 29, 1991

BEFORE:

HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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ENVIRONMENTAL ASSESSMENT BOARD
ONTARIO HYDRO DEMAND/SUPPLY PLAN HEARING

IN THE MATTER OF the Environmental Assessment Act,
R.S.O. 1980, c. 140, as amended, and Regulations
thereunder;

AND IN THE MATTER OF an undertaking by Ontario Hydro
consisting of a program in respect of activities
associated with meeting future electricity
requirements in Ontario.

Held on the 5th Floor, 2200
Yonge Street, Toronto, Ontario,
on Tuesday, the 29th day of October,
1991, commencing at 10:00 a.m.

VOLUME 76

B E F O R E :

THE HON. MR. JUSTICE E. SAUNDERS	Chairman
DR. G. CONNELL	Member
MS. G. PATTERSON	Member

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1 ---On commencing at 10:04 a.m.

2 THE REGISTRAR: This hearing is now in
3 session, please be seated.

4 THE CHAIRMAN: Mr. Moran?

5 MR. MORAN: Thank you, Mr. Chairman.

6 KEITH DOUGLAS BROWN,
7 PAUL FRANK VYROSTKO,
8 JOHN KENNETH SNELSON; Resumed

9 CROSS-EXAMINATION BY MR. MORAN (cont'd):

10 Q. Good morning, Panel.

11 Just picking up where we left off
12 yesterday, I take it that we can agree that there is a
13 role for high-efficiency cogeneration to play in
14 reducing air emissions due to electricity generation as
15 a general principle, at least.

16 MR. SNELSON: A. Yes.

17 Q. I take it from the evidence that you
18 gave yesterday, that at this stage at least you don't
19 know the parameters of that role, but you have included
20 it on the basis of having made a judgment call along
21 those lines?

22 A. No. I think we have accounted in our
23 avoided cost for the value of its role in reducing air
24 emissions, and that's reflected in the way in which we
25 do business with the non-utility generation.

Q. Is there anything that you can draw

1 to the Board's attention that would show that
2 accounting?

3 A. Yes. At the time that Exhibit 3 was
4 prepared, which was is the Demand/Supply Plan Report,
5 in Chapter 16, I believe, page 16-8, figure 16-4, and
6 that is at the top left-hand corner of the page, and in
7 that figure is separately identified as part of the
8 system incremental cost, a cost for a scrubber adder of
9 0.6 cents per kilowatthour which is a specific
10 allowance for the value of reducing acid gas emissions.

11 In later versions of avoided cost, that
12 same approach has been adopted and I believe the number
13 is somewhat higher now.

14 Q. And that has in fact been added into
15 the avoided cost when you were trying to establish what
16 the purchase rates should be for NUGs, particularly
17 high-efficiency cogen?

18 A. That is a part of the avoided cost
19 when coal-fired generation is presumed to be the fuel
20 that is being avoided.

21 Q. Okay. And, Mr. Brown, in terms of
22 the total emissions that we could expect from
23 non-utility generation that uses combustion, we will
24 have to wait for the 1991 NUG plan to see those kinds
25 of figures.

1 MR. BROWN: A. Those are for the '89
2 plan provided in figure 4.1 of the environmental
3 assessment.

4 Q. You made reference yesterday to some
5 air emission figures that why going to be included in
6 the 1991 NUG plan.

7 A. We were going to update figure 4.1 in
8 the 1991 plan.

9 Q. Is that going to give us a total picture
10 of expected air emissions from non-utility generation.

11 A. Based on the information we have on
12 general emissions from high-efficiency cogen, yes.

13 Q. When do we expect that to be
14 available?

15 A. I would say December, by year end.

16 Q. The reason I ask is I think earlier
17 on I think there was some indication it might be
18 October.

19 A. It's normally the numbers are
20 available in late October, early November. That's not
21 the case this year.

22 Q. I would like to move to the next area
23 under this category and talk a little bit about
24 hydraulic non-utility generation. You will agree that
25 small hydraulic stations can have a variety of impacts

1 on rivers, I assume.

2 A. This is discussed in the
3 environmental section, yes.

4 Q. Okay. Now, Hydro, as I understand
5 it, screens out hydraulic sites that it itself is
6 interested in on the basis, at least using one factor
7 called severe environmental impacts. There are other
8 factors, I understand as well, but that's one of the
9 factors that is used for screening down the total
10 inventory of hydraulic sites that Hydro would want to
11 develop.

12 Is there any similar process used when
13 you are looking at hydraulic non-utility generation?

14 A. I use the same factors. The numbers
15 I am using to estimate the technical potential for
16 small non-utility generation hydraulic is based on the
17 numbers that are produced in Exhibit 28, the hydraulic
18 plan.

19 Q. Mr. Brown, are you saying that you
20 have an equivalent kind of list that we see in the
21 hydraulic plan for non-utility generation hydraulics?

22 A. I am saying that the sites that are
23 excluded by Ontario Hydro are the same ones that I
24 excluded.

25 Q. I see. You don't exclude any other

1 sites other than the ones that Ontario Hydro has
2 specifically excluded under its own hydraulic plan?

3 A. That's correct.

4 Q. So, in other words, the answer to my
5 question is, no you don't do a similar kind of process
6 for non-utility hydraulic sites?

7 A. I do the same process.

8 Q. Nothing extra, though. You are just
9 taking what has been excluded?

10 A. That's correct.

11 Q. Okay.

12 THE CHAIRMAN: But their assessment is
13 based on the entire potential in the province which is
14 then brought down, so that the same sites are excluded,
15 as I understand the evidence. There would be no more
16 to exclude.

17 MR. MORAN: Q. As I understand it,
18 Ontario Hydro goes through its screening process
19 because there are certain sizes of sites that it is
20 interested in, and it's interested principally in sites
21 that are much larger than sites that would otherwise be
22 suitable for non-utility generators to utilize, right?

23 MR. BROWN: A. I think if you wait until
24 Panel 6 there will be a better definition of why sites
25 are excluded, but size was not the only factor.

1 Q. I would like to draw your attention
2 now to Interrogatory 5.32.22.

3 Perhaps we could get a number for that,
4 Mr. Chairman.

5 THE REGISTRAR: That will be 321.61.

6 ---EXHIBIT NO. 321.61: Interrogatory No. 5.32.22.

7 MR. MORAN: Q. Again, this is a very
8 short question and answer. The question was:

9 A fuller discussion of the potential
10 environmental limitations or constraints
11 of the potential NUG contribution and an
12 examination and assessment of the
13 advantages and disadvantages of NUGs in
14 terms of the social and environmental,
15 taking into account long-term costs and
16 impacts.

17 Response: The 1990 NUG plan assumes
18 that all NUG projects will meet
19 environmental standards. No studies have
20 been done to quantify the potential
21 environmental limitations or the social
22 advantages and disadvantages of NUGs.

23 Is that the response you would give with
24 respect to the 1991 NUG plan?

25 MR. BROWN: A. We are adding a section

1 to the 1991 NUG plan to look at the environmental
2 impacts of the components of the plan.

3 Q. Okay.

4 A. It would be very similar to that
5 provided in the environmental assessment report.

6 Q. So we will have to wait and see that
7 report then.

8 A. Yes.

9 Q. We have so far looked at three areas
10 that involve government regulation, there was the
11 safety factors, as well as environmental impacts due to
12 hydraulics and due to the remainder of non-utility
13 generators.

14 You will agree that essentially that
15 government is responsible for enforcing its own
16 regulations. It's not a controversial statement,
17 right?

18 MR. VYROSTKO: A. I would agree with
19 that.

20 Q. And you will agree that basically
21 government regulations kick in once you have a
22 committed project underway, right?

23 A. I think that the actual obligation
24 would start to occur after the project has been
25 committed and the project gets underway, although I

1 would think that a lot of the regulations and
2 discussions about the regulations would occur prior to
3 that.

4 Q. And a lot of these discussions would
5 primarily be perhaps between Hydro and the non-utility
6 generator as opposed to government and the non-utility
7 generator, at least at the preliminary stage, right?

8 A. I think the preliminary stage would
9 be where we would be identifying some of the
10 requirements, the permits and licences that we think
11 would happen.

12 The proponent would then be going to the
13 government, in some cases even before they get into
14 fuller discussions with us, to get a reasonable
15 expectation for themselves that the project can in fact
16 meet the necessary requirements.

17 Q. You will also agree that as a general
18 rule you really don't want to get involved in
19 negotiations except for projects that are at least on
20 their face reasonable ones or fairly likely to be
21 successful ones, right? You don't want to waste the
22 time and effort otherwise.

23 A. Our expectation would be that we
24 would be dealing with projects that can in fact meet
25 all of those regulations.

1 [10:15 a.m.]

2 Q. Okay. And you will agree that you
3 would prefer to get involved only in those kind of
4 projects rather than wasting time and effort
5 negotiating over others that perhaps are not going to
6 be that successful?

7 A. Yes, we would prefer to deal with
8 those that we think can in fact become technically and
9 economically viable.

10 Q. And if you are dealing primarily with
11 projects that stand a good chance of success, you will
12 agree that that will make the forecasting process a bit
13 easier and perhaps more accurate, Mr. Brown, right?

14 MR. BROWN: A. Those factors are already
15 incorporated into my forecast.

16 Q. I believe you indicated that you have
17 a one out of five success rate at this point, earlier
18 on.

19 A. Sorry. Not my success rate. I was
20 saying that there are project proposals that come to
21 Ontario Hydro, in the past on average one in five have
22 been committed.

23 Q. That's what I meant too, okay. I
24 didn't mean that you were to blame personally for the
25 failure of the other four.

1 I guess my question that I'm leading up
2 to then is whether there is a role for Ontario Hydro to
3 play in terms of having a better organized approach to
4 educating potential proponents about the regulatory
5 regimes and so on to ensure perhaps a better success
6 rate than one in five?

7 A. Maybe I should just start by saying
8 that the one in five isn't just because of education,
9 it may be just straight economics. The proponent isn't
10 really aware of Hydro's avoided cost or what he is
11 going to get for his proposal when he initially submits
12 it, so a lot of the factors are economics not
13 environmental.

14 In terms of education I think we do a
15 lot, and Mr. Vyrostk can add some of the factors we
16 do, but we provide pamphlets. We have provided
17 workshops where we invite participants and a lot of the
18 effort is in the area of environment. We have helped
19 the Independent Power Producers Society of Ontario in
20 establishing an environmental committee where they can
21 get involved because it is of major concern for this
22 industry. And we have information on our front display
23 to help them as well and we always tell them to visit
24 the government where there is any questions.

25 Q. Do you have any kind of breakdown

1 relating to those proposals that didn't make it that
2 would indicate how many couldn't make it for economic
3 reasons as opposed to perhaps failure to meet with
4 regulatory requirements? From my point of view at
5 least, it would appear that failure to meet regulatory
6 requirements impinges directly upon the economics of
7 the project. Do you have a more sophisticated
8 breakdown than just that?

9 MR. VYROSTKO: A. No, we don't because
10 in many cases a proponent doesn't necessarily tell us
11 why they have all of a sudden decided not to proceed
12 with the project.

13 Q. And from looking at those projects,
14 you are not able to determine yourselves what the
15 reasons might be for that kind of withdrawal?

16 A. No, in many cases we can't.

17 Q. The next area I would like to turn
18 to, I am referring to is sector viability.
19 Cogeneration typically as you have indicated goes hand
20 in hand with industrial enterprises, and I believe
21 three kinds have been mentioned so far: the pulp and
22 paper sector, the chemical sector and the mining
23 sector.

24 Will you agree that in order to assess
25 the reliability of cogeneration projects in these

1 sectors, and perhaps others, that it's useful to have
2 an idea about the particular industry and how it
3 performs?

4 MR. BROWN: A. In terms of negotiating
5 contract and in terms of forecasting, you have to have
6 a pretty good feel for what is involved with the
7 industry, current activities, and the long-term outlook
8 of that industry.

9 Q. You have indicated that most of the
10 contracts in this area are about 20 years long, 15 or
11 20 years; right?

12 A. For cogeneration that's a typical
13 length.

14 Q. And if we look at the last 20 years,
15 I think we can agree that there has been at least two
16 recessions. How do things like that get factored into
17 your assessment of the long-term performance of
18 proposals that are put into you?

19 A. In general, the economy itself is not
20 a direct factor in the forecast. Where it does come to
21 play is where we are using project data because if the
22 industry is currently weak, we are getting less
23 proposals and are more concerned with keeping the
24 business running than in building a cogeneration site.
25 So that it would be a decrease in activity which would

1 have an impact on the forecast.

2 Q. Do you have any in-built auditing or
3 checking process that allows you to follow up once you
4 do have committed NUGs to ensure that they are
5 performing at least within expectations?

6 A. In terms of a contract we pay for
7 performance, so that's a primary measure of checking up
8 on how well they are doing.

9 Q. Presumably, when you are paying
10 things out you will notice if they are not up to
11 scratch. I guess I am more interested in what you
12 would do in advance of that that might try and
13 determine what kinds of problems are beginning to
14 develop as opposed to when they have actually happened.
15 Do you have any kind of auditing process of that kind?

16 MR. VYROSTKO: A. Currently we do not
17 have any auditing process. Through the normal building
18 mechanisms that we have with respect to monthly
19 records, we have a sense of how well the individual
20 project is performing. And we are, as Mr. Brown said
21 previously, we are in the process of developing a
22 reliability data base to give us an expectation as to
23 how well they are in fact performing relative to what
24 they said they were going to.

25 Q. You will agree that with an expanding

1 NUG program it is becoming more important to track
2 reliability overall if the system is going to rely on a
3 greater amount of NUGs; right?

4 A. Yes. And that's why Mr. Brown is
5 proceeding with that responsibility.

6 Q. What role does insurance play in
7 ensuring that your NUGs will continue to produce
8 electricity over the long term?

9 Let's say in a particular project, they
10 are getting into some sort of difficulty for one reason
11 or another. Is there any role at this point in any of
12 your current projects for insurance? Is there
13 insurance policies in place to ensure the long term
14 viability of at least the NUG part of the project?

15 A. Insurance from the private sector?

16 Q. Yes. Do you have any requirements
17 for insurance?

18 A. We don't have any requirements. I
19 think that if a proponent were to look at how they
20 would protect their investment and their overall
21 long-term assets, I think that would be something that
22 they would be looking at. But we don't have a
23 requirement for that.

24 Q. If you have a greater number of
25 high-efficiency cogeneration projects out there, you

1 will agree that the risk of failure becomes more
2 important because you have got a greater number of
3 projects; right?

4 A. I would think the more projects you
5 have there is a less risk of failure with regard to any
6 one of those projects. So, if you are looking at the
7 risk of all of the projects failing as opposed to the
8 one, then I might suggest that your assumption is
9 correct. But with more projects I would think we have
10 got diversity there and I think the risk of any one
11 failing is less.

12 Q. If we take the pulp and paper sector,
13 for example, if we have a world-wide slowdown in that
14 sector, a large number of cogen facilities would be put
15 at risk, wouldn't they, in a situation like that?

16 A. If all the companies were facing all
17 the same pressures and their economics were all
18 reasonably the same, then they could all be in the same
19 circumstance, yes.

20 Q. My question is this then: If you
21 have that kind of possibility, is there anything in
22 Hydro's planning that would allow you to meet a problem
23 like that and ensure that a large section of your NUG
24 program doesn't slow down or shut down?

25 A. Again I think the entire value of

1 non-utility generation being spread across all sectors
2 and being in essence composed of a number of smaller
3 projects provides some of that assurance because your
4 scenario is that the pulp and paper industry were to be
5 suffering and they might be down, but a lot of the
6 projects are also from other sectors, so they would not
7 be down typically that so that's one of the values that
8 non-utility generation brings and that is that it's
9 spread around.

10 Q. At this point do you have any
11 requirement for insurance or performance bonds or
12 anything along those lines?

13 A. No, we do not.

14 Q. Up to now, are there any NUGs that
15 have been lost due to bankruptcy?

16 A. No, there haven't.

17 Q. And up to now are there any NUGs that
18 have been lost to premature shut-down for technical
19 reasons?

20 MR. BROWN: A. There have been
21 shut-downs and retirements. I can't comment on whether
22 that is premature or not.

23 Q. Up to now have there been any NUGs
24 that haven't made it to the end of the 15- or 20-year
25 contract?

1 A. No.

2 MR. VYROSTKO: A. Can I just maybe
3 clarify that for a minute. We actually have two types
4 of NUGs: those NUGs that have been traditional, the
5 long standing NUGs that really don't have contracts
6 with us, and then the NUGs that have sort of started as
7 a result of our initiatives in the early '80s and
8 coming forward.

9 [10:25 a.m.]

10 And so we really should be looking at,
11 there are two different levels of information. There
12 are the traditional ones and the new ones. And so
13 maybe our response to the question might be different
14 depending on whether we are looking at old traditional
15 NUGs versus the new ones.

16 Q. Do you want to answer the question I
17 asked then for those two categories?

18 A. I believe Mr. Brown was referring to
19 retirements and I was talking about the traditional
20 NUGs. Because in his plan he in fact tries to forecast
21 the retirements of existing NUGs. Those that we have
22 contracts with since the early 80s, I don't believe any
23 of those have closed down.

24 Q. Okay, I am going to turn to another
25 area now.

1 You will agree that NUGs, particularly
2 hydraulic NUGs in areas of Northern Ontario at least,
3 have the potential to have impacts upon Aboriginal
4 interests, right, such as fishing and hunting and
5 others?

6 A. That's correct.

7 Q. And I understand that there has been
8 recent changes at the senior level at Ontario Hydro
9 where we now have a vice-president who is responsible
10 for Aboriginal relations; is that correct?

11 A. Senior vice-president, yes.

12 Q. In your part of the corporation, do
13 you have somebody who has similar responsibilities with
14 respect to the NUG program?

15 A. Yes. I have someone who is
16 responsible for developing programs associated with
17 some of the northern communities.

18 Q. All right. How are Aboriginal
19 interests taken into account in the NUG program?

20 MR. BROWN: A. If it's a private
21 developer developing the site, it's his responsibility
22 to coordinate his efforts with the Aboriginal concerns,
23 and we have had successful projects that have done
24 that.

25 If it's an Aboriginal group that's

1 interested in developing a projects, it's handled a
2 little differently.

3 Q. Do you have any particular programs,
4 Mr. Vyrostkco, that are geared specifically towards
5 assisting or promoting Aboriginal development and
6 ownership of NUGs?

7 MR. VYROSTKO: A. We are currently
8 working on a program that was discussed in our direct
9 evidence called "The Remote Community Program" and that
10 is aimed at trying to encourage development in the
11 northern communities, specifically remote communities.

12 Q. I guess my question was with respect
13 to Aboriginal ownership and development, do you have
14 any specific programs geared to that area?

15 A. We have some initiatives within the
16 remote communities that are giving us some information
17 with respect to how we can then move forward and
18 develop a program for dealing with some of the native
19 peoples.

20 Q. So you are in the process of
21 considering whether a program should be developed then,
22 is that fair?

23 A. We are doing some test projects to
24 give us some information on that, that's correct.

25 Q. What consideration do you give in

1 this initiative to the fact that some Aboriginal groups
2 live on reserves and are not able to use reserve assets
3 as collateral? Do you have any consideration for
4 financial assistance in situations like that?

5 MR. BROWN: A. It's not a factor that we
6 have considered to date. We are in the program looking
7 at various areas where we can help and we are looking
8 for their input on what they require to build a
9 project. That hasn't been an issue that they have
10 identified to date.

11 Q. The initiative that you are talking
12 about now, is that something that's run out of your
13 branch?

14 A. The NUG program is being developed in
15 our branch in consultation with the remote community
16 office in Thunder Bay and the Aboriginal group at 700
17 University.

18 THE CHAIRMAN: I'm sorry, I didn't hear
19 what you said after Aboriginal group.

20 MR. BROWN: Our new senior
21 vice-presidents section.

22 MR. MORAN: Q. What kind of budget have
23 you dedicated to this initiative at this point with
24 respect to the NUG plan?

25 MR. BROWN: A. Since the program is

1 under development there is no specific set of funds set
2 aside for that. The work we are doing right now is
3 just coming under our OM&A. When a program is
4 developed there will be funds set aside at that time.

5 Q. Okay. I would like to turn now to
6 the October 18th, 1991 announcement as set out in
7 Exhibit No. 346. I understand that Exhibit 346 was
8 actually a handout to the NUG industry on October 18th
9 as part of a meeting that took place.

10 A. This was handed out to those people
11 attending, yes.

12 Q. And under the new rules as you have
13 indicated, you want more dispatchable NUGs as opposed
14 to what you have traditionally being getting. I just
15 want to confirm that by dispatchable you are referring
16 to NUGs that are going to be load-following, which is
17 another term we have heard from time to time in this
18 hearing?

19 A. Load-following in my definition is
20 steam load-following where the cogenerator is following
21 his own load, not Ontario Hydro's system load.

22 Dispatchability would be following
23 Ontario Hydro's total load in the province and at the
24 control of the Clarkson Control Centre, and that may be
25 different than your definition.

1 Q. And those kinds of Hydro-owned
2 facilities would also be called by Hydro load-following
3 or dispatchable facilities, right?

4 A. That's one form of dispatch, yes.

5 Q. I would like to draw your attention
6 on the second page after the cover page, and we see
7 some bullets there. The third bullet is the one that I
8 want to draw your attention to.

9 In order to not deteriorate power
10 system operating flexibility, contracts
11 with larger NUGs need to be structured
12 for dispatchable deliveries whenever
13 possible. The economics of dispatchable
14 NUGs within Ontario Hydro's avoided costs
15 are uncertain.

16 Isn't it true that Hydro assigns a high
17 value to its own load-following facilities?

18 MR. SNELSON: A. Ontario Hydro must have
19 the capability to be able to dispatch generation to be
20 able to meet the load exactly on a day-by-day,
21 hour-by-hour, minute-by-minute basis. We evaluate
22 plans to find the lowest cost plan that can achieve
23 that.

24 I don't think that we can separately
25 identify and say, we pay this much for dispatchability

1 from this generating plant and this much for
2 dispatchability from another generating plant.

3 We do have though specific types of
4 generation that tend to be used for a more dispatchable
5 duty than other types, usually the higher fuel cost
6 types.

7 Q. If you have a plant that operates
8 only part of the time as opposed to the same plant
9 operating 100 per cent of the time or up to capacity,
10 the electricity that's being produced is more valuable
11 electricity because it's at a higher cost though, isn't
12 it, for the one that's operating part of the time?

13 A. If it is operating part of the time
14 under the control of the control centre, so as those
15 times are chosen to be times of high value then yes it
16 has a higher value. If it operates part of the time,
17 the time is controlled in some other way, then it may
18 have a lower value.

19 Q. And there is an economic value to the
20 system, isn't there, because overall you can have
21 reduced generation costs as a result of this more
22 expensive form of generation; isn't that true?

23 A. I don't think it follows that a more
24 expensive form of generation lowers costs. But the
25 peaking type of generation generally has the

1 characteristic of a low capital cost or a low fixed
2 cost, and that's the characteristic that makes it good,
3 that it's got a low fixed cost.

4 If it happens to have a high fueling
5 cost, then that is something can be tolerated as long
6 as it isn't required to operate too many hours a year.

7 Q. Would that apply to the coal-fired
8 plants that you use to follow demand?

9 A. The coal-fired plants are best suited
10 to more an intermediate sort of duty than a real
11 peaking duty, but they do have a lower capital cost
12 than some of the other plants on the system like the
13 hydraulic and nuclear plants.

14 Q. Would you agree that overall though
15 by having a peaking plant which in itself may be
16 expensive on a per kilowatthour basis, overall for the
17 system there is an economic benefit?

18 A. Yes, peaking plants that are operated
19 a small proportion the time tend to have a higher cost
20 per kilowatthour, and that is acceptable provided that
21 they have the characteristics I am talking about of low
22 fixed costs.

23 Q. Because overall it keeps overall
24 generation costs as low as possible, right?

25 A. Yes. The generation costs are lowest

1 if the high capital cost, low fuel cost plant is used
2 base load and the low capital cost, high fuel cost
3 plant is used as peaking plant.

4 Q. Has that kind of value been factored
5 in to your consideration of dispatchable NUGs as
6 described under the new guidelines?

7 A. That kind of consideration is
8 inherent in the avoided cost calculations that we have
9 been doing all along.

10 Q. Then when you are talking about the
11 uncertainties of the economics in this statement, you
12 must be talking about something else, right?

13 A. I think you are talking about the
14 next level of uncertainty.

15 Dispatchability has a value that can be
16 predicted by saying, in this future year I expect the
17 load to be a certain level, to have a certain pattern
18 in each hour, and I can evaluate how the system would
19 operate and what is the value of dispatching to meet
20 that particular shape of load that is forecast in the
21 future.

22 Where the difficulty comes is when
23 uncertainties about the future are factored in and how
24 the value of the dispatchable plant that's dispatchable
25 over a wide range compares to something that has a

1 fairly fixed pattern of dispatch.

2 Say, for sake of example, that we were to
3 specify that the value of a dispatchable plant that
4 could operate five days a week, 16 hours a day, during
5 the high load periods, we can predict the value of that
6 if everything turns out to be as we forecasted.

7 If for some reason conditions are
8 different and the loads are very low and we don't need
9 to operate that plant at all, then there is some value
10 to not having to buy that power at all if you don't
11 need it, or being able to operate in a case where we
12 have under-forecast the load, or being able to operate
13 it base load if we need to.

14 So we can forecast the expected value of
15 the dispatchability. Our methods of forecasting the
16 additional value of flexibility to change that pattern
17 of dispatch is a lot more difficult.

18 Q. How do you plan to allow for that
19 kind of uncertainty when you come to deal with
20 proponents who will want to be assured that they are
21 not in fact going to be throwing their money away 10
22 years from now because your forecast is perhaps lower
23 than otherwise expected?

24 A. I think we have to have business
25 arrangements with the non-utility generator that

1 reflects the realities of his financial structure such
2 that he gets paid for having available capacity whether
3 or not it is run, and that has to be sufficient to
4 cover his fixed costs, and he has to have a separate
5 charge for energy which is related to his incremental
6 cost of energy production, and with that sort of
7 arrangement then the question of dispatch becomes quite
8 similar to that of an Ontario Hydro plant, and the
9 proponent is assured of a reasonable financial return
10 independent of whether or not the system requires him
11 to be operated a lot or a little.

12 Q. So under this approach in fact
13 economics would not be uncertain as suggested perhaps
14 in this document because you would have worked out an
15 answer to that?

16 A. I think we know some of the answer.
17 There are complexities in working out that sort of
18 arrangement and there are complexities in estimating
19 the value of the ability to change from the operating
20 pattern.

21 [10:40 a.m.]

22 Q. But in suggesting that there might be
23 economic uncertainties, these are not things that are
24 extrinsic to Ontario Hydro, these are things that you
25 are in fact actively working on to resolve. They are

1 within your control or ability perhaps to resolve?

2 A. They are things that we are working
3 on resolving.

4 Q. One of the reasons I understand for
5 this change to requiring dispatchable NUGs is the fact
6 that you are going to have a surplus of, as I
7 understand it, about 5,000 megawatts over a period of
8 1997 to the year 2008; is that correct?

9 A. I think the requirement for
10 dispatchability is a separate issue.

11 Q. The requirement for dispatchability
12 is totally unrelated to the fact that there would be a
13 surplus during that time frame?

14 A. I think I said in my direct evidence
15 that certain types of non-utility generation which
16 don't lend themselves to dispatch but are preferred
17 options, such as cogeneration and small hydro, it's
18 appropriate that we continue to not require a high
19 degree of dispatchability from those facilities because
20 they can't easily provide it.

21 But when we come to facilities that are
22 not well matched cogeneration or are electricity-only
23 generating plants and they are operating primarily to
24 meet the needs of the electricity system, and given
25 that the industry is becoming more mature and given

1 that the non-utility generation is getting to be a
2 bigger proportion of the system, then it is vital that
3 they have the sorts of dispatching capabilities that we
4 have of our own generation system.

5 Q. And the main reason for that is
6 because you anticipate a surplus?

7 A. No.

8 MR. BROWN: A. I may add that we want
9 dispatchability right now. There is no surplus at this
10 time. Dispatchability is very important in operating
11 the system throughout the year.

12 Q. So the 5,000 megawatt surplus that
13 you anticipate has nothing to do with this requirement
14 for dispatchability; is that what you are indicating?

15 MR. SNELSON: A. The requirement for
16 dispatchability is a system requirement and it would be
17 a requirement whether or not there was a surplus.

18 Q. If I may have a moment, Mr. Chairman.

19 THE CHAIRMAN: Yes.

20 MR. MORAN: Q. If you are going to have
21 dispatchable NUGs and if you are going to have
22 dispatchable Hydro-owned facilities, what kind of
23 decision-making factors are we looking at when you are
24 trying to decide whether you should turn off a NUG as
25 opposed to a Hydro plant?

1 MR. SNELSON: A. I expect that will
2 become part of the dispatching procedure of the system
3 control centre along the lines that were described by
4 Mr. Barrie in Panel 2.

5 Q. You are predicting that the same
6 parameters will be used. But what I don't understand
7 is you have Hydro-owned facilities on one side and
8 non-Hydro-owned facilities on this side. How are you
9 going to decide whether it's the private side or the
10 public side that should be turned down first?

11 A. Well, in deciding how to dispatch
12 Ontario Hydro generation, then economics is one of the
13 factors that is taken into account: What is the
14 incremental cost of the next increment of generation
15 from different plants that are available? And let's
16 choose the one that has the lowest incremental cost.

17 Now from an overall economic dispatch
18 point of view of an Ontario Hydro system and a NUG
19 system, then you would want to get close to that. I
20 would expect that the system control centre would in
21 fact for non-utility generators be looking at some
22 incremental payment to the non-utility generator for
23 additional kilowatthours that were generated as the
24 proxy for the incremental cost. And that would be part
25 of the contract that would have to be negotiated with

1 the non-utility generator.

2 Q. In terms of maintaining the long-term
3 stability of the NUG industry, would that be a factor
4 in this decision-making process?

5 A. If the terms for the contract of the
6 NUG have been worked out fairly, then the stability of
7 the industry should not be threatened according to
8 whether they are dispatched a lot or a little.

9 DR. CONNELL: Panel, while there is a
10 pause may I just ask you. A few moments ago, Mr. Moran
11 cited a figure of 5,000 megawatts. Is there a
12 citation? Has that appeared earlier in your evidence?

13 MR. SNELSON: No, it has not. I suspect
14 that Mr. Moran's comment about 5,000 megawatts relates
15 to some discussion that occurred at the meeting with
16 the NUG proponents on October the 18th.

17 DR. CONNELL: Will that be made available
18 to us?

19 MR. SNELSON: It will when the
20 information is fully prepared. It was a preliminary
21 indication of some directions that things are moving at
22 the moment. Some changes since I was giving my direct
23 evidence on Panel 5 since the 3,000 megawatts, 3,100
24 megawatts for non-utility generation was accepted by
25 the Corporation. It relates to some adjustments to the

1 load forecast that are in process and will be
2 incorporated in the plan re-balancing exercise that is
3 underway.

4 DR. CONNELL: Thank you.

5 MR. MORAN: Q. You are referring to the
6 re-integration process that Mr. Campbell has alluded to
7 previously?

8 MR. SNELSON: A. Yes.

9 Q. Yesterday you indicated that during a
10 period of surplus you would expect avoided costs to be
11 depressed. I would assume that that would mean in turn
12 that there would perhaps be some disincentive for NUGs
13 during that particular time period while the surplus
14 exists because avoided costs may be too low for them to
15 bring forward economic proposals?

16 A. I believe it is an incentive for the
17 NUGs to bring forward proposals at the time of system
18 need. So it kind of discourages a NUG from bringing
19 forward a proposal during a period when the avoided
20 cost is low; and then as you approach the time of
21 system need, the avoided cost rises to the long-term
22 cost of additional generation, and that would encourage
23 the NUGs to bring forward projects at times which match
24 system need.

25 Q. If this period of surplus is

1 accompanied by the implementation of a long lead time
2 option such as a nuclear plant, what kind of changes,
3 if any, are we looking at, that we would see or expect
4 to see in avoided costs?

5 A. I don't think it is likely that we
6 would propose long lead time plant to be constructed at
7 a time that was expected to exacerbate a surplus.
8 Consequently, I wouldn't expect it to have a
9 significant effect on extending a period of surplus or
10 extending a period of low avoided cost.

11 Q. If the long lead time coincides with
12 the surplus but when it comes on line the surplus is
13 beginning to diminish, and I am only looking now at the
14 time where the lead time is overlapping with the period
15 of surplus, when you were answering yesterday on this
16 point you indicated that avoided costs would largely be
17 determined by fuel costs and ongoing maintenance costs.
18 If accompanying that you also have the cost associated
19 with this lead time implementation, would we expect
20 avoided costs to drop in that kind of circumstance?

21 A. I would expect avoided cost for the
22 years of the surplus themselves to be relatively low
23 and avoided cost for the period when new generation was
24 planned to be in-service to be higher. And that the
25 leads time -- the costs that are used to calculate the

1 value of avoiding or deferring new generating capacity
2 would include all the costs of developing that
3 capacity.

4 Q. In other words, all the construction
5 costs and so on that are being incurred during the
6 period of surplus, even though the plant isn't in
7 service, would also be factored into avoided cost
8 during that period?

9 A. They become part of the avoided cost
10 during the period when new generation is planned, when
11 generation can be avoided.

12 Q. I understand under the new guidelines
13 that you will be requiring new proponents of NUGs to
14 meet a heat rate of 6,600 btu's per kilowatthour. Can
15 you confirm that?

16 MR. VYROSTKO: A. That's correct.

17 THE CHAIRMAN: That translates it at 9
18 per cent; is that correct?

19 MR. VYROSTKO: That's correct.

20 MR. MORAN: Q. And that's the same thing
21 when you say a 9 per cent component to adder, you are
22 talking about 6,600 btu's?

23 MR. VYROSTKO: A. That's right.

24 Q. Could you indicate why you chose this
25 limit as opposed to the 7,000 btu limit that is set out

1 in the Income Tax Act, Class 34 Rules?

2 A. Basically we used the knowledge that
3 we have acquired from the industry to try to recognize
4 and reflect the industry's capability to meet what we
5 would classify as a high-efficiency cogen project, and
6 approximately 6,600 btu per kilowatthour reflects a
7 good quality efficient cogenerator and so therefore we
8 wanted to use that as a definition.

9 Q. So your goal is to get good quality
10 high-efficiency cogeneration in other words?

11 A. That's correct.

12 Q. Now I thought I understood you to say
13 to Mr. Starkman yesterday that the dispatchable portion
14 doesn't have to be within this limit; in other words,
15 it could be less sufficient; is that true?

16 A. Basically what I was saying yesterday
17 was that each proponent would be expected to put
18 forward a project that would qualify within our 9 per
19 cent efficiency adder. And if they wanted to provide
20 more megawatts than that project would allow, they
21 could but it would have to be dispatchable.

22 Q. As long as it was dispatchable though
23 it wouldn't have to meet your 6,600 btu requirement?

24 A. That's correct. The total project
25 would then not qualify or meet the 9 per cent.

1 Q. Could you indicate what effect we are
2 going to have on this goal for high-efficiency
3 cogeneration if every megawatt of high efficiency is
4 matched with a megawatt of low efficiency, albeit
5 dispatchable?

6 A. I think at this time it is too early
7 to tell. We really don't know what response we will
8 get from proponents with these projects in terms of
9 dispatchability. And we are still uncertain as to
10 whether in fact proponents can put any dispatchable
11 project together that's economic and necessarily what
12 type of criteria they would be asking for in terms of
13 how we would then try to dispatch that to make the
14 projects economic. So I think it is just too early to
15 tell.

16 What we are trying to do with these
17 guidelines is to provide some flexibility to the
18 industry to try to provide us with something that we
19 are looking for as well which is dispatch.

20 Q. And that's largely because you
21 haven't yet figured out how you are going to actually
22 pay for dispatchable NUGs at this point? You haven't
23 figured out the parameters yet?

24 A. Well, as Mr. Snelson said, there are
25 indications from an overall system perspective what

1 dispatch provides. I think the bigger uncertainty is
2 whether a proponent could put a dispatchable project
3 that meets that type of economics.

4 Or the type of constraints that a
5 proponent might be asking for when they come forward
6 with dispatch because for instance if it is a natural
7 gas-fired plant, they have to buy natural gas and
8 obviously the gas company or the gas contract would
9 somehow have some minimum procurement of gas. And the
10 question is how would a proponent then try to reflect
11 that need to cover off the cost for some basic
12 procurement of gas to cover off dispatch? So some of
13 those questions we just don't know at this time.

14 [10:55 a.m.]

15 Q. As I read the guidelines it would
16 appear that there are two ways to get dispatchable
17 NUGs. One way would be to have a high-efficiency cogen
18 plant and then side by side you have got basically a
19 dispatchable straight CTU kind of plant; that's one
20 way, right?

21 A. I don't think that's what we were
22 looking at in terms of the type, having two separate
23 plants. I am not sure if that would be one of the ways
24 that we are looking at this.

25 Q. Would that not be one way to do it

1 though? You have your high-efficiency cogen operating,
2 that machine is there, and then you have a dispatchable
3 machine as well?

4 A. Again, if a proponent can put an
5 economic project together that would in fact have two
6 different projects and therefore all the costs would be
7 separately isolated so that there is an economic value
8 placed on the one project and then he has got a
9 separate project that is trying then to become an
10 economic project as well, if that can happen that might
11 be a possibility.

12 But I think in most cases we are looking
13 at dispatch as being an increment to the existing plant
14 because of economies of scale and values of capital
15 costs in there. So, I don't think it's isolated
16 plants.

17 Q. Yes, that's the other way. You could
18 actually just have the one plant which is partly
19 dispatchable and partly high-efficiency generation,
20 right, cogeneration?

21 A. That's correct.

22 Q. But those two possibilities exist?

23 A. They do exist.

24 Q. With respect to the second
25 possibility, the one where you have a high-efficiency

1 cogeneration plant which will also be producing
2 dispatchable NUGs, isn't it fair to say that the
3 hardware that's involved in that kind of a machine is
4 going to be a lot more complicated and subsequently
5 more expensive?

6 A. I can't necessarily answer whether it
7 would be a lot more complicated. I think there will be
8 additional equipment there. There will be probably
9 additional controls that will have to be placed on that
10 so that it can be called up whenever it is necessary to
11 be called up. But to necessarily categorize that as
12 more complicated, I guess I can't answer that.

13 Q. If we take an example of a plant
14 where you are using steam to heat soup, for example,
15 for whatever reason, and at the same time there is this
16 dispatchable capability, there is going to have to be a
17 balancing process available so that one operation
18 doesn't suffer as a result of the other, right?

19 A. That's correct. In the design you
20 would be having again your reference project and then
21 this incremental dispatch and the question is how you
22 control that incremental dispatch.

23 Q. So there are some technical problems
24 that are additional to the normal high-efficiency
25 cogeneration once you introduce dispatchability?

1 A. There are additional pieces of
2 equipment that will have to be acquired, that's
3 correct.

4 THE CHAIRMAN: I believe you said
5 yesterday you don't, at the moment, have any in-service
6 dispatchable NUGs; is that correct?

7 MR. VYROSTKO: That's correct.

8 THE CHAIRMAN: But I take it because of
9 this guideline that you expect that there is a
10 possibility that there will be some in the future; is
11 that correct?

12 MR. VYROSTKO: The guideline in fact is
13 to try to encourage people to try to propose
14 dispatchability so that we have an understanding as to
15 what type projects we could get with that, that's
16 correct.

17 THE CHAIRMAN: I am just not sure. Is
18 the dispatchable energy you may achieve as a result of
19 this, would that be in addition to the 3,100 or how
20 would it fit into that mosaic?

21 MR. BROWN: It would be, if you remember,
22 the future NUGs plans are only forecasting
23 high-efficiency cogeneration, so it would just be the
24 high-efficiency component.

25 Once a project is signed up I will then

1 include that in the plan at that time with the
2 dispatchable component added on.

3 THE CHAIRMAN: Just to make sure, if you
4 do get some of them then you will add it on to the
5 3,100; is that right, and you will change your
6 forecast?

7 MR. BROWN: The dispatchable component
8 would be added on to the 3,100, that's correct.

9 MR. MORAN: Q. Do you have any analysis
10 at this point that will indicate that the NUG industry
11 in fact is going to be able to meet this new limit and
12 still have economic plants, or are you just waiting to
13 go see what happens?

14 MR. VYROSTKO: A. With respect to the 9
15 per cent?

16 Q. Yes, the new guidelines.

17 A. Well, first of all, we believe that
18 we can get projects that will qualify for that. A
19 number of our existing projects have qualified. So we
20 don't anticipate having major problems getting projects
21 qualifying for that.

22 Q. What is the basis for your belief?

23 A. Again, based on projects that we have
24 seen in the past and the efficiencies that they have
25 been able to achieve.

1 Q. Could you perhaps indicate the kinds
2 of range of efficiencies that you have seen with
3 projects so far?

4 A. We have seen projects achieve
5 efficiencies down to the order of 6,000 btu per
6 kilowatthour.

7 Q. And up to what?

8 A. Well, if go to a major supply NUG you
9 are looking at something higher than 8,000.

10 Q. And in that range what percentage has
11 been within your new guideline limit?

12 A. I don't know offhand what the
13 percentage would be.

14 Q. Is that something that you could
15 provide us later on?

16 A. In some cases we don't know yet
17 because of the stage we are at with the project. We
18 can't necessarily determine yet what that is in some
19 cases.

20 Q. For projects where you do know
21 though, is that something you can provide later on?
22 Just a simple breakdown that would show what kind of
23 percentage of projects that are underway now, well
24 committed, what percentage of those are meeting the
25 heat rate in the new guideline?

1 A. I think I can do that.

2 MR. MORAN: Mr. Chairman, perhaps we
3 could mark that as an undertaking.

4 THE CHAIRMAN: No.?

5 THE REGISTRAR: Undertaking 322.22.

6 ---UNDERTAKING NO. 322.22: Ontario Hydro undertakes to
7 provide the percentage of projects
8 underway now that meet the heat rate in
9 the new guideline.

10 MR. MORAN: Q. What kind of feedback --
11 I know that the announcement was October 18th, can you
12 give us an idea of what kind of feedback you have
13 gotten from the industry at this point?

14 MR. VYROSTKO: A. I guess I personally
15 haven't had any feedback.

16 Subsequent to the meeting I had some
17 comments at the meeting with respect to how the
18 proponents saw the guidelines. Some saw it as positive
19 and some saw it as being restrictive with respect to
20 the different types of projects that could be put
21 forward by themselves.

22 So, I think we really had the range of
23 comments both from positive in terms of direction that
24 people saw as being important, and for other people it
25 was restrictive.

Q. One of the restrictions of course is

1 that straight major supply NUGs are basically out of
2 the running at this point.

3 A. Or in some cases the low-efficiency
4 cogeneration projects.

5 Q. And low efficiency, right.

6 Barring of course the possibility that
7 somebody can bring forward a dual project that has a
8 major supply NUG that is dispatchable on the one hand
9 and a high-efficiency cogen on the other if it's
10 economic to do that, right?

11 A. Again, if they can meet the
12 guidelines then they would be acceptable, yes.

13 Q. Do you have any analysis available
14 that has been done to compare advantages and
15 disadvantages of major supply NUGs against the thermal
16 generation technologies for which Hydro is seeking
17 approval, their conventional steam-cycle coal
18 generators and the CTUs that are listed in the
19 approvals chapter?

20 MR. SNELSON: A. We expect there to be a
21 discussion on Panel 8 of the environmental and other
22 characteristics of combustion turbine and
23 combined-cycle generation, and those are the
24 technologies which would be used by major supply NUGs.
25 So, in that sense, it will be addressed in Panel 8.

1 Q. Is there any consideration given to
2 the possibility of having those particular plants in
3 the form of NUGs as opposed to Hydro-owned and operated
4 facilities?

5 A. That's something that we are
6 certainly prepared to consider, is what we have
7 indicated.

8 Q. And that's notwithstanding the fact
9 that you are currently seeking approvals for those
10 kinds of plants, right?

11 A. Currently, and when the approvals
12 were drawn up, that was not our expectation that the
13 NUGs would be interested in providing such facilities.

14 Q. If the NUG industry is interested,
15 then you would be prepared to consider that
16 possibility?

17 A. I think it is something that has to
18 be considered when we determine that there is a need
19 for such facilities.

20 Q. Just while we are on this point how
21 do transmission costs get allocated to a Hydro-owned
22 thermal generation plant?

23 A. In planning analyses we try to take
24 into account impacts on the transmission system. In
25 particular, when studies are being done on site

1 selection for generating plants, then the costs of the
2 transmission system are very central to those studies.
3 So, in site selection processes transmission costs can
4 often be the determining factor as to the general area
5 in which a site is being sought.

6 Q. And the rules that Hydro follows for
7 its own plants, are they the same rules that would be
8 applied to any NUG?

9 A. Our intent is to mirror the same
10 process. In practice, because we are not selecting the
11 sites for the non-utility generators and because we are
12 dealing through a contract and through a negotiation
13 process, then the practice may be different, but the
14 intent is the same.

15 Q. I want to move at this point to the
16 table that's being set out in the new guidelines,
17 Exhibit 346. Again, it's on the second page after the
18 cover page. The table is entitled, "Planned and
19 Expected NUG Capacity Megawatts", and it scans a time
20 from 1991 to the year 2000.

21 On the first line we see the heading
22 "1990 NUG Plan" and on the second line we see the
23 "Accelerated Plan". I assume those two lines simply
24 demonstrate the change that has occurred between the
25 1990 NUG plan and the evidence you are giving here

1 today, correct?

2 MR. BROWN: A. The accelerated plan is
3 our 3,100 preliminary estimate on a year-by-year basis.

4 Q. So those two, the first two lines in
5 that table basically demonstrate those changes?

6 A. Yes.

7 Q. And when we look at the third line,
8 it's entitled "In-service Plus Committed", and this
9 goes up to 1993, and the fourth line is "In-service
10 plus Committed plus Likely". I assume that those two
11 lines -- the fourth line is basically additive to the
12 third line?

13 A. No, these are all separate lines.

14 The in-service, likely and committed line
15 includes the line above, the in-service plus committed.

16 Q. Right. And the figures as they run
17 across of the table are cumulative, right?

18 A. Yes, they are.

19 Q. Do you have a breakdown of the
20 numbers on the third line that would show how many of
21 those projects meet your guidelines currently
22 concerning the heat rate?

23 THE CHAIRMAN: That's the same question
24 that you just asked a moment ago, isn't it, the same
25 undertaking? Isn't that what they are going to get for

1 you?

2 MR. MORAN: It may be. I just want to
3 make sure that that is the case, or if there are
4 additional questions.

5 I think the undertaking, Mr. Chairman,
6 referred to projects that are behind them that they
7 know a lot about, and these go to 1993, still to be put
8 into service.

9 THE CHAIRMAN: Maybe I misunderstood. I
10 thought it was in-service and committed that they were
11 asked for.

12 MR. MORAN: Right. But you will also
13 notice on the third line that those figures run up to
14 1993, and we are not yet at 1993, so I want to ask
15 about those figures that have still to come on stream.

16 MR. VYROSTKO: I guess I was saying that
17 typically with committed projects we would have an idea
18 from the proponent as to what the heat rate would be.
19 So this undertaking that I was looking at would be
20 looking at in-service and committed.

21 THE CHAIRMAN: Let me understand. In the
22 third line, in-service plus committed, would those be
23 all now committed as of the date of the table but
24 aren't expected to come on-stream until 1993?

25 MR. VYROSTKO: That's correct.

1 THE CHAIRMAN: Or are they expectations
2 of future commitments which I would have thought would
3 be the likely category.

4 MR. VYROSTKO: That is exactly right.
5 The third line is those that are in-service and
6 committed and they are under construction, in essence,
7 now.

8 MR. MORAN: Q. The figure that we see
9 under 1991 I assume is a figure that represents sites
10 that are presently in-service, they are built, right?

11 MR. BROWN: A. There may be some that
12 are still to be built by year end.

13 Q. By year end, okay. And then the
14 differences that are represented by the figures under
15 1992 and 1993 are the ones that are still to be built,
16 right?

17 MR. VYROSTKO: A. That's correct.

18 Q. Perhaps in the undertaking that you
19 gave me you could just separate the ones still to be
20 built and just indicate what you expect to be the heat
21 rate for those projects so that we have a separation.

22 A. I may not be able to do that.
23 Depending on how many projects there are, I could be
24 providing information specifically on a project, and
25 that could be violating some of the confidentiality.

1 Q. I am not looking for the names of any
2 projects; I want just want the numbers, that all.

3 A. Again, if there is only one project
4 though that would be in that category, then you would
5 typically know which one it is.

6 Q. I think we can agree that just having
7 a number next to project one, as opposed to the name, I
8 don't think will pose any confidentiality problems.

9 A. Okay, if I can do that, we will do
10 that.

11 MR. MORAN: Mr. Chairman, perhaps Mrs.
12 Formusa can help us on this point.

13 MRS. FORMUSA: I think it is quite clear.
14 I understand that the confidentiality issue has been
15 dealt with and we will answer the undertaking without
16 breaching any confidentiality.

17 MR. MORAN: The only clarification I
18 would see, Mr. Chairman --

19 THE CHAIRMAN: Let's see what happens.
20 We will cross that have bridge when we come to it.

21 MR. MORAN: Yes. I am just looking for
22 numbers of plants that meet the heat rate, that's all.
23 I am not asking for confidential information.

24 THE CHAIRMAN: There is some evidence
25 somewhere that the present projects, uncommitted ones,

1 all meet the high efficiency. So, it is just a matter
2 of -- is it 6,000?

3 MR. VYROSTKO: No, all the current
4 projects don't necessarily meet the high efficiency
5 one.

6 THE CHAIRMAN: The 6,600, but the old
7 guidelines.

8 MR. VYROSTKO: Well, the old guideline
9 was again the sliding scale which actually went all the
10 way up to 10,000, so they would meet that, but that's
11 not the same as this one.

12 There are some that meet the new
13 guidelines and under the old standards, and I think
14 that's we would try to determine, the percentage of
15 those that would do that.

16 THE CHAIRMAN: I am not sure how this is
17 all going to help us make the decisions that we are
18 supposed to be making, but I guess if you want this
19 information and they are prepared to give it, I am not
20 going to object to it.

21 MR. MORAN: Thank you, Mr. Chairman.

22 Q. The fourth line adds in projects that
23 are classified as likely. The projects that are
24 included here as likely, are they changed as a result
25 of the new guidelines, or are you still proceeding with

1 those to whatever end result you will get on them?

2 MR. VYROSTKO: A. I think the ones that
3 are shown as likely are the ones that we have talked
4 about that have price offers already formally accepted
5 in most cases by ourselves and the proponent, so they
6 are proceeding as originally negotiated.

7 Q. Perhaps in the undertaking you could
8 put a third column that would indicate how many of
9 those that are likely also meet the new guidelines, the
10 6,600. Would you be able to do that?

11 A. I may not know some of that
12 information on some of those. For those that I would
13 know, yes, I can include that.

14 Q. Okay. Some of the ones you might
15 know, that would be because they are too far down the
16 line at this point?

17 A. They are not far enough down the
18 line.

19 Q. Not far enough, sorry.

20 Is it true that the new guidelines don't
21 apply to any of the 2,188 megawatts that we seen in
22 line 4? They may meet the guidelines but they don't
23 have to; is that true?

24 A. I think the guidelines are intended
25 for projects that we are now proceeding in the future

1 with.

2 Q. So you are talking past the 2,188?

3 A. That's correct.

4 Q. And if we look at the forecast on the
5 accelerated plan we see that we are expecting 3,107
6 megawatts by the year 2000, and the total on the
7 committed the -- on the in-service plus committed plus
8 likely line is 2,188 megawatts, so in terms of the
9 forecast at least we are talking about 1,000 megawatts
10 give or take a few that will have to meet the new
11 guidelines, right?

12 A. There are, in terms of these new
13 guidelines and the fact that there were a number of
14 proposals that we had been working on for two to three
15 years, there are a few proposals that we are still
16 treating as part of the old guideline that we are
17 completing negotiations with.

18 [11:21 a.m.]

19 Q. Right.

20 A. So they would be in addition to the
21 2,188 if they were in fact to materialize. And then
22 after that all new projects would have to follow
23 guidelines.

24 Q. If we look at the final number on
25 line 2 and the final number on line 4, the difference

1 there is in the order of 1,000 megawatts.

2 A. That's correct.

3 Q. And in terms of the forecast at least
4 it's those 1,000 megawatts that will have to meet the
5 new guidelines that we are talking about?

6 THE CHAIRMAN: No, that's not what he
7 said. He said there may be some that aren't in the
8 likely category yet which they would give, they would
9 grandfather for the purpose of this.

10 MR. MORAN: All right.

11 Q. Do you have an idea at this point
12 about how many megawatts might be grandfathered in
13 beyond the 2,188?

14 THE CHAIRMAN: I'm not quite sure where
15 all this is getting us, Mr. Moran. What is this all
16 about? Why do you need to know this kind of detail?

17 MR. MORAN: Well, Mr. Chairman, the NUG
18 program is an important component of the overall plan
19 particularly from the government's point of view and we
20 need to, I believe, get a full understanding of exactly
21 the role that the NUG program can play.

22 THE CHAIRMAN: I think the program is
23 fully and well described. What the actual situation on
24 the ground at the moment is as to whether or not a
25 particular project is treated under the old rules or

1 the new roles, what difference does that make to you?

2 MR. MORAN: I am not considerably
3 concerned about whether a project is treated under the
4 now rules or the old rules. I am simply trying to get
5 an idea of what number of megawatts are going to be
6 treated under the new rules so that we can see the
7 impact, have some idea perhaps of the impact of the new
8 rules, at least by the year 2000, given the forecast of
9 3,100.

10 I am not trying to determine whether
11 there are good or bad points to staying under the old
12 or new rules. I just simply want to get a clear idea
13 of what the new rules actually do apply to at this
14 point in terms of the forecast.

15 I thought originally it might be 1,000
16 megawatts but there will some apparently that will be
17 grandfathered in and I would just like to know what
18 that number is so we get the full picture.

19 MR. VYROSTKO: It's approximately 800
20 megawatts.

21 MR. MORAN: Q. So, if all of those are
22 going to be put into the category of likely and perhaps
23 even committed, then ultimately the end result is we
24 are looking at about 200 megawatts that will have to
25 meet the new guidelines by the year 2000?

1 MR. VYROSTKO: A. Additional megawatts.

2 Q. 200 additional megawatts, all right.

3 Now as I read your guidelines regarding
4 dispatchability, my understanding is that those are
5 voluntarily, they are not positive requirements. Is
6 that correct?

7 A. That's correct.

8 Q. If nobody takes you up on this offer,
9 what are you going to do about the requirement for
10 dispatchability that you have indicated is the reason
11 for the new guidelines?

12 A. I guess first of all I am not sure if
13 the reason for the new guidelines is trying to get more
14 dispatch. I think the reason for the guidelines is the
15 number of issues with respect to system need, to
16 transmission limitations, to a number of different
17 factors.

18 Q. Clearly one reason is to get
19 high-efficiency cogeneration?

20 A. That's correct.

21 Q. And I am talking in addition to that.

22 A. And what we are saying is that we
23 would be prepared to consider dispatch if the proponent
24 could put a dispatch project forward to us that in fact
25 would meet all the requirements that we have, both

1 technical and economic.

2 And so what we are trying to do is
3 encourage that side of the business now to go beyond
4 just looking at projects, base load projects, to see
5 whether in fact they can bring forward dispatch
6 projects. So, that's an encouragement we are looking
7 for. But the primary purpose of the guidelines is now
8 to move towards high-efficiency cogen.

9 Q. I am going to move away from the 1991
10 announcement now. I see it is almost 11:30, Mr.
11 Chairman. Is this an appropriate time for a break?

12 THE CHAIRMAN: We will take a break now
13 for fifteen minutes.

14 THE REGISTRAR: This hearing will recess
15 for 15 minutes.

16 ---Recess at 11:24 a.m.

17 ---On resuming at 12:44 a.m.

18 THE REGISTRAR: Please come to order.
19 This hearing is again in session. Be seated, please.

20 THE CHAIRMAN: Mr. Moran.

21 MR. MORAN: Thank you.

22 Q. As I understand the new guidelines
23 you were making available the possibility of
24 dispatchable megawatts to all projects that are already
25 in existence as well as ones that are going to be

1 coming on stream; is that correct? Maybe I can draw
2 your attention to page 4 after the cover page of
3 Exhibit 346 and it's item B(2)

4 MR. VYROSTKO: A. Yes, we have made the
5 offer to existing proponents to consider giving us
6 dispatch.

7 Q. And as I read B(2), anybody who has
8 an existing contract can match the megawatts that are
9 presently selling to Ontario Hydro with an equal number
10 of dispatchable megawatts?

11 A. If they wanted to add megawatts in
12 their existing project, they could add megawatts if
13 they provided an equal amount of dispatch as one
14 alternative.

15 The other alternative is to just give us
16 dispatch if they so desire it as well.

17 Q. Right. So there are two things that
18 can happen then. The first thing would be that they
19 can simply match their current megawatt figure with the
20 same number of dispatchable megawatts, right, that's
21 one thing? That's one alternative?

22 Let's say you have a high-efficiency
23 cogen plant that is producing 30 megawatts, under the
24 new guidelines they could offer to you an additional 30
25 megawatts of dispatchable, right?

1 MR. BROWN: A. Provided all 60 is fully
2 dispatchable.

3 Q. I see. That was not completely
4 clear, at least to me, from this, so basically what you
5 are saying is that for current operations if somebody
6 wanted to add on dispatchable megawatts they would have
7 to convert an equal number of their current megawatts
8 into dispatchable megawatts?

9 A. If they have that capability, yes.

10 Q. Now it seems when you read that
11 subsection as well that it is possible to add on new
12 megawatts and then match the new megawatts with
13 dispatchable. How does that fit into what you have
14 just described? Would that mean you would still have
15 to convert everything you presently have into
16 dispatchable as well as adding on dispatchable.

17 A. I think this is written because there
18 are probably some existing facilities that have
19 dispatch capabilities already which are not being used,
20 so this would allow them to utilize that component of
21 their existing operation and allow them to increase it.

22 Q. So the net result is for every
23 dispatchable megawatt that they want to offer you in
24 addition, they would have to convert a current megawatt
25 into a dispatchable megawatt. That is the net result;

1 right?

2 A. That is what is stated in this
3 section, yes.

4 Q. For new contracts, and I guess we are
5 talking I guess about the 200 megawatts that we might
6 have by the year 2000 that do have to comply with the
7 guidelines, they don't have to give you total
8 dispatchable megawatts. They can have high-efficiency
9 cogen and then they can match that with additional
10 dispatchable megawatts; right? And that's the general
11 intent of the guidelines that apply to new contracts?

12 MR. VYROSTKO: A. They can provide
13 additional megawatts that match to the reference
14 project which is a project that meets the guidelines.

15 Q. And the reference project doesn't
16 have to be dispatchable, does it?

17 A. No, the reference project just has to
18 meet the 9 per cent or the 6,600 btu per kilowatthour.

19 Q. Can you explain why you are treating
20 the new projects differently from existing projects,
21 given that you have just indicated that for existing
22 projects they would have to convert current megawatts
23 to match new dispatchable megawatts?

24 A. I think the first thing we are trying
25 to do is to ensure that the projects that we get meet

1 high-efficiency cogen. If some of the existing
2 customers or proponents aren't high-efficiency cogen,
3 then we want to be very careful that what we are asking
4 them to provide us with in addition is something that
5 is good for the system and good for the province in
6 total.

7 And so what we are trying to do is make
8 sure that what we are getting with existing projects
9 is, if we are looking at dispatch, clearly it is
10 dispatch for us. And so what we don't want to do is
11 necessarily increase non-efficient projects and
12 increase their size and at the same time get dispatch.
13 So to some extent we are trying to in fact focus on the
14 high-efficiency and make that the preference.

15 THE CHAIRMAN: Perhaps for clarification.
16 If an existing NUG meets the high efficiency of the
17 reference project, would it be entitled to add
18 dispatchable NUGs to that project?

19 MR. VYROSTKO: We would clearly consider
20 that, yes.

21 THE CHAIRMAN: So really there is no
22 difference between the treatment of new projects and
23 existing projects in that respect?

24 MR. VYROSTKO: If they are high
25 efficiency, that's correct, it would be the same.

1 MR. MORAN: Q. If I understand your last
2 answer to the Chairman then, that would be an exception
3 to the guideline. You would be making an exception for
4 existing high-efficiency cogenerators, right, by not
5 requiring them to convert to dispatchable?

6 I see a bit of a conflict in what you
7 have just said. We have existing contracts out there,
8 some of them are high efficiency and some of them are
9 not. You have indicated that if the low-efficiency
10 types want to offer dispatchable megawatts, you would
11 require them to convert some of their present megawatts
12 into dispatchable also.

13 But as I understood your answer to the
14 Chairman right now, you have also indicated that if it
15 was a high-efficiency plant in existence right now you
16 won't require them to convert to dispatchable megawatt
17 for megawatt?

18 MR. VYROSTKO: A. I don't think we would
19 necessarily require that. Again as I said, I think if
20 we are dealing with a high-efficiency cogen project,
21 whether it is a new projects or an old project, we
22 would try to treat that the same, and that is to
23 recognize a high-efficiency cogen project and if in
24 fact it was of benefit to ourselves and to the
25 proponent, they can in fact go with dispatch. Just

1 adding --

2 Q. Just adding it on?

3 A. Adding it on.

4 Q. Without converting it?

5 A. Without converting it.

6 But if you have an existing project which
7 doesn't meet that, then it may be slightly different.

8 Q. So, when we look at B(2) then, I
9 guess what you are saying is that B(2) is not going to
10 apply to existing high-efficiency cogeneration?

11 A. I wouldn't think so.

12 Q. Would you use the same dividing line
13 of 6,600 btu's to distinguish high-efficiency existing
14 cogenerators from low efficiency?

15 A. I think that that would be a category
16 that would apply to both existing and new.

17 Q. Mr. Brown, given that there is the
18 potential for the 3,100 forecasted megawatts which we
19 see in the upcoming plan to yield a potential at least
20 of 3,100 megawatts of dispatchable megawatts, is there
21 any way that you are planning to take that into account
22 in the 1991 NUG plan or is it too early to try and do
23 that?

24 MR. BROWN: A. First of all I don't
25 think you are going to get 3,100 of dispatch. We are

1 looking at high-efficiency cogeneration which is only a
2 part of the 3,100. Right now I haven't seen any
3 evidence that projects will be able to put forward or
4 are interested in dispatchable. And when I start
5 seeing that, I will start looking at it in the forecast
6 as they are committed.

7 Q. The next area I want to move to now
8 relates to rate structures for different kinds of --

9 THE CHAIRMAN: Just before we leave it
10 and we are on that page of the guidelines. Following
11 the one and two, there is a sentence that says:

12 Ontario Hydro reserves the right to
13 negotiate, limit or decline offerings of
14 dispatchable megawatts.

15 What is your understanding of the
16 implications of that sentence, particularly with
17 respect to -- given there is a situation where someone
18 otherwise meets the guidelines, would you still decline
19 the offering in certain circumstances?

20 MR. VYROSTKO: Yes, I think what we had
21 as a potential issue here is that the guideline would
22 become the base case concept for the proponent and then
23 we would all of a sudden maybe end up having a lot more
24 dispatchable contracts without the focus on high
25 efficiency, when in fact we want the first, we want to

1 focus on high efficiency and only add dispatch if we
2 can get it.

3 So our concern is we may end up getting a
4 lot of projects that all they can give us is dispatch
5 and we want to ensure that high-efficiency cogen is a
6 first concept.

7 And the second issue that we don't know
8 yet is what type of qualifications, constraints, or
9 even economics would we be presented with respect to
10 dispatch, so we would like to see the types of offers
11 we get first before we make any commitment to how many
12 or how far we go with those.

13 THE CHAIRMAN: Thank you.

14 MR. MORAN: Q. Just a last question on
15 this point before I do move on. I assume that given
16 that you have indicated there would be an exception
17 made for high-efficiency cogen that's presently in
18 existence, that you will be taking some steps to
19 communicate that exception to the industry so that they
20 will understand more fully these guidelines?

21 MR. VYROSTKO: A. I think that again
22 these guidelines are draft guidelines. We presented
23 them to the industry on October 18th. Clearly what we
24 are looking for is feedback from them in terms of how
25 they view those and whether in fact some of those are

1 practical. And if we got information from the industry
2 that the way we set them out are just impossible, then
3 clearly, you know, we have to look at them.

4 Q. I am going to move on now. You will
5 agree that there are two ways in theory at least to get
6 cogeneration. One will be to deal directly with the
7 steam host and the other one would be to go through a
8 third party developer, is that correct, who would be an
9 intermediary perhaps between the steam host and Ontario
10 Hydro?

11 A. That's correct.

12 Q. If we look at the example of
13 high-efficiency load displacement NUGs, as I understand
14 your evidence originally, your approach in cases like
15 that is based upon sharing benefits; is that correct?

16 A. Yes, it is trying to give the same
17 value to that project as we would to any other project
18 with respect to our avoided costs.

19 Q. Right. But by sharing benefits,
20 isn't it true that you are really talking about
21 purchase rates that perhaps are less than avoided cost?
22 I'm only talking about the load displacement
23 high-efficiency cogeneration at this point.

24 A. A load displacement generator would
25 have a value. That project would have a value to us

1 that is reflected by our avoided cost. And we would be
2 prepared to give the full avoided cost to that project.

3 But in calculating what that avoided cost
4 of the value that we give to the project, we deduct the
5 revenues that we would not have as a result of that
6 proponent generating themselves. And so whatever that
7 difference is, we would be prepared to give that to the
8 generator so that he does get the same value as any
9 other generator for the project.

10 Q. Would this be an application of the
11 no-losers test?

12 MR. SNELSON: A. The no-losers test
13 applies to demand management.

14 Q. Would this be a similar kind of thing
15 to what we saw being described in the demand management
16 panel?

17 A. We consider that this is the purchase
18 of generation and that the lost revenue from a load
19 displacement non-utility generator is part of the cost
20 of buying that generation.

21 [12:00 p.m.]

22 Q. Is your answer yes or no as to
23 whether it's an example of the application of a
24 no-losers test?

25 A. The no-losers test applies to demand

1 management, it doesn't apply to non-utility generation.
2 It's not --

3 Q. The reason I ask that, I am struck by
4 the language in terms of sharing benefits, it was the
5 same kind of language we heard with reference to the
6 no-losers test in the demand management context. I am
7 just wondering if it's the same kind of approach?

8 A. The concept of the no-losers test
9 applies to demand management, it doesn't apply to
10 non-utility generation the way we use it.

11 Q. Now, my understanding is that the
12 third party developer, to use the other route, he would
13 be treated as a purchase NUG; is that correct? That's
14 how you would deal with that kind of a proponent?

15 MR. VYROSTKO: A. That's correct.

16 Q. Who would be able to negotiate for up
17 to avoided cost plus whatever preference adder that
18 might apply to the project, right?

19 A. Well, the preference adder is part of
20 the avoided cost, so you would be able to then get a
21 project that reflects the value of that project.

22 Q. Okay. Would you agree that we have
23 two kinds of steam hosts at least in theory, one that
24 would be willing and able to do a cogeneration project
25 itself because it has the expertise and time and

1 capital, and the other is one that would prefer perhaps
2 to rely on the expertise of a third party because they
3 don't have the expertise themselves? Would you agree
4 with that broad categorization of steam hosts?

5 A. There are those types of
6 opportunities and alternatives, yes.

7 Q. The question I have is, how do you go
8 about ensuring given that you have one kind of approach
9 with high-efficiency cogeneration load displacement
10 types of NUGs and another approach when it's involving
11 a third party developer being treated as a straight
12 purchase NUG. How do you ensure that those two
13 different approaches in fact have a neutral impact on a
14 decision by a steam host to take one route or the
15 other?

16 A. I think the way we do that is we
17 treat both of them equally with regard to how we value
18 the project on our avoided costs, and therefore, we are
19 prepared to pay the full avoided cost for either
20 project.

21 Q. Given that you take into account lost
22 revenue under one scenario and not the other, how do
23 you ensure that this has a neutral impact on a decision
24 by a steam host to go by way of a third party as
25 opposed to dealing directly with Hydro on it's own

1 project?

2 A. The lost revenue that a load
3 displacement project typically would get is additional
4 revenue that they would now see to justify their
5 project.

6 If you take that revenue that now they
7 get back to them, because they don't have to buy
8 electricity from a utility, and add to that the
9 additional systems we are prepared to provide under our
10 financial assistance program, those two in total equal
11 the avoided cost. So, the value that they then get is
12 the same as a third party developer would get.

13 Q. All right. I am going to move to
14 another area now, and basically I would like to talk
15 about Hydro's activities that relate to preferred
16 options.

17 I assume that even with the
18 implementation of the new guidelines that we see in
19 Exhibit 346, that we still have basically the same list
20 of preferred options that you first described in your
21 direct evidence.

22 MR. SNELSON: A. Yes, that is correct.
23 The only modification is to the sliding scale
24 efficiency that we recognize.

25 Q. Right. You have now given specific

1 reference to something that will be more efficient than
2 6,600 btu's per kilowatthour?

3 A. That's correct.

4 Q. With respect to those preferred
5 options, the high-efficiency cogeneration and the
6 renewable resources cogeneration, would you agree
7 that -- I will deal first with the high-efficiency
8 cogeneration. Would you agree that if you have an
9 integrated plant design from scratch, that that is a
10 more efficient way to go about obtaining
11 high-efficiency cogeneration than compared to
12 retrofitting a plant to do the same thing?

13 MR. BROWN: A. Could you redefine that?
14 I'm not too sure of the differences there.

15 Q. All right. Would you agree that
16 there are two ways to get high-efficiency cogeneration,
17 one is to build it into a new plant as you are building
18 it from the ground up, and the other one is to take an
19 old plant and to retrofit it to do the same thing?
20 Would you agree that that's two ways of achieving
21 efficiency cogeneration for a particular kind of plant?

22 A. Yes.

23 Q. Would you agree that between those
24 two alternatives, that from an engineering point of
25 view it makes more sense to do it as part of the

1 initial plant as opposed to going in and trying to
2 retrofit?

3 A. I think it obviously would be easier
4 to do it from an original -- if you are designing a
5 plant that's going to use steam and you have
6 cogeneration in mind, then that scheme is better than
7 coming back 20 years later and trying to fit it into a
8 building that wasn't designed for cogeneration.

9 Q. In fact, it might be cheaper to do it
10 from scratch as opposed to retrofitting, right?

11 A. Not necessarily.

12 Q. In terms of education programs, do
13 you have any programs -- we heard programs described by
14 the Demand Management Panel. I was wondering if you
15 have some of similar kinds of programs to get to
16 architects and plant designers and engineers and those
17 kind of people, so that they have this kind of idea in
18 their mind before they start designing new plants, do
19 you have any programs along those lines?

20 A. Our programs are aimed at all people
21 in the industry, not just those that have existing
22 steam use.

23 We have given presentations to, say, the
24 Consultant Engineers of Ontario who are in the business
25 of designing these things.

1 Q. Do you have any programs that are
2 aimed at influencing decision-makers to include
3 high-efficiency cogeneration as part of a new plant as
4 opposed to waiting later on to do it by way of a
5 retrofit?

6 A. All our programs are applicable to
7 those people, and we have many inquiries from people
8 designing buildings to incorporate those facilities.

9 Q. Beyond inquiries that come from
10 people, do you have anything formal on your side that
11 goes after in a proactive way at least to influence
12 those decision-makers so that --

13 A. Our communication is broad based. We
14 have many brochures that tell of our activities and
15 services that are provided by Ontario Hydro. Those are
16 not just limited to people who have existing
17 facilities; it goes to the whole industry, including
18 architects and consulting engineers who would be
19 designing buildings.

20 Q. When you say the whole industry, what
21 do you mean by that?

22 A. To us the industry involves all
23 stakeholders, the person developing it, the fuel
24 source, the manufacturers, the consultants that design
25 the projects, the engineers.

1 Q. My question I guess is that in
2 addition to the broad approach as you have described
3 it, do you have any programs that are specifically
4 aimed at influencing the decision-makers directly, the
5 plant engineers, the design engineers, the architects,
6 do you have anything that is specifically aimed at
7 them?

8 A. I don't know that they are the
9 decision-maker. They are the designer. The
10 decision-maker is the proponent that comes to us.

11 Our activities are focused on everybody.
12 We don't focus on any one particular part of the
13 industry.

14 Q. Do you have any specific programs
15 that are aimed specifically at people who want to build
16 plants in order to show them the advantages of
17 including cogeneration as part of the overall plant
18 design? I guess what I am talking about, do you have a
19 program that's capable of taking advantage of
20 opportunity when it makes sense to do that?

21 A. My response is the same. Our
22 communications are directed at everybody in the
23 business, those that may not even have projects on
24 their plate who may in the future build those projects.

25 MR. VYROSTKO: A. Could I maybe add to

1 Mr. Brown's comments?

2 Many of the new decision-makers that are
3 looking at projects would be dealing with regional
4 representatives, Hydro's regional representatives, when
5 they in fact are looking at the opportunity and we work
6 with our regional representatives with regard to
7 identifying cogen opportunities, giving them all of the
8 information that we have with respect to information,
9 so that they become then the person that in fact would
10 be helping people put those projects forward.

11 So, in many cases our regional
12 representatives are dealing with the types of people
13 that you are talking about.

14 Q. When particular projects comes up for
15 discussion with the regional representatives, is it an
16 automatic part of the regional representative's
17 reaction to those meetings to include discussions of
18 cogeneration possibilities?

19 A. If it was the type of process or the
20 type of industry that would be indicating potential
21 opportunities for cogeneration, then they would be
22 talking with them.

23 Q. And is this a process that's
24 triggered by an inquiry about cogen, or is this
25 something that's proactively by the regional

1 representatives?

2 A. Both. If there is an inquiry that
3 comes in, they have their entire menu of programs that
4 Ontario Hydro has, and they would then go through those
5 menus that apply to that individual project and
6 identify those.

7 In some cases we have our representatives
8 actually visiting customers to help them look at their
9 overall energy usage, and if they saw an opportunity
10 for cogeneration as a result of waste heat or whatever,
11 they would at that time also be recognizing and
12 identifying that to the customer. So it's proactive
13 and reactive.

14 Q. Are you able to say that for every
15 proposed plant that comes to the attention of the
16 regional representatives, that that plant will be
17 assessed for this kind of opportunity?

18 A. No, I can't say that in every case
19 that would happen. I couldn't say that.

20 Q. I want to move now to the topic of
21 competitive bidding, which I believe you referred to as
22 competitive solicitation in the new guidelines.

23 You have made some reference to the fact
24 that you believe the industry, the NUG industry is
25 maturing. I am just wondering if there are other

1 factors -- first of all, is that a factor that would
2 indicate to you perhaps it might be appropriate to
3 consider competitive bidding, or are there additional
4 factors or other factors separate from that?

5 A. I think there is a number of factors
6 that we would want to consider before moving towards
7 competitive solicitation or competitive bidding, either
8 one. One is that there is an industry that that in
9 fact is capable of putting projects together and, in
10 essence, therefore, competing with themselves fairly on
11 putting projects together.

12 (2), that there would be a need, a need
13 that can be identified by Ontario Hydro, and that need
14 then could be communicated to the industry, and they
15 can then go after trying to satisfy that need.

16 I think that tying in to that need would
17 be also having specific parameters associated with that
18 need that can be communicated. Typically, when going
19 out there with an competitive bid you like to identify
20 the size of capacity block that you would be looking
21 for, you would be in most cases dealing with location,
22 so that people all have sort of the reasonable
23 expectation as to where those projects would be.

24 So there are a number of factors that we
25 want to consider before we proceed with competitive

1 solicitation.

2 Q. Is a 3,100 megawatt industry the kind
3 of industry that is capable of doing competitive
4 bidding?

5 A. I would think that that would be a
6 good indication, yes.

7 Q. On page 6 of your overheads in
8 Exhibit 320 you put up a map that showed preferred
9 areas for NUGs. Do you recall that? I don't think it
10 is necessary to look at it. Do you recall that map?

11 MR. SNELSON: A. Yes, I certainly do.

12 Q. Okay. That kind of map, does that
13 suggest to you perhaps there is a need for Ontario
14 Hydro that might be met by competitive bidding given
15 you have preferred areas?

16 MR. VYROSTKO: A. I think that that map
17 would be an indication that there are important areas
18 that we may want to encourage non-utility generators to
19 locate within.

20 Q. And given the transmission
21 constraints that you have also described, would that
22 not also be a factor that would indicate perhaps it
23 might be appropriate to consider competitive bidding so
24 that you avoid the transmission constraints in
25 particular areas?

1 A. If competitive bidding was able to do
2 that and we would feel assured that requesting
3 proponents to bid within a location to do that, yes, I
4 think that's appropriate.

5 Q. Competitive bidding essentially is an
6 opportunity for Ontario Hydro to direct the industry,
7 isn't it? You can choose the areas that you want to
8 receive proposals in and you can choose areas to avoid
9 where there is transmission requirements, you can
10 establish guidelines and criteria as well that might be
11 of use to you. It gives you a lot of control, doesn't
12 it?

13 A. It does give some discipline and
14 control to the acquisition of projects, yes.

15 MR. BROWN: A. I just want to add. The
16 selection of a spot in the province does not have to be
17 limited just to competitive bidding. You can do the
18 same thing under the old open solicitation process and
19 still restrict where NUGs are going to go into.

20 Q. Would that apply to areas where you
21 have determined that there are transmission
22 constraints?

23 A. I guess my point is that criteria
24 could be in any solicitation process.

25 Q. In Exhibit 346, the new guidelines,

1 you indicated that at least under the current regime
2 you are only prepared to reserve transmission capacity
3 for a limited period of time because you don't want it
4 tied up indefinitely because other projects can come
5 along and take advantage of that if the first project
6 doesn't. Do you recall that evidence?

7 MR. VYROSTKO: A. Yes, I do.

8 Q. Is that not a problem that could be
9 overcome through competitive bidding? You could put
10 the transmission capacity up for bids and then allow it
11 to be taken up as a result of the bidding process?

12 A. That's correct. But as Mr. Brown
13 said, any type of formal solicitation can address the
14 same thing.

15 Q. I am just about finished. I have a
16 couple of miscellaneous questions, I guess, to ask you
17 at this point.

18 You talked about one source of
19 non-utility generation being gas from landfill sites.
20 What consideration have you given to gas from sewage
21 control plants that also produce gas?

22 MR. BROWN: A. To date we recognize the
23 technology as being used in the United States and
24 possibly in Ontario. To date we do not see any
25 evidence that the contribution from this technology

1 will exceed 5 megawatts, so it hasn't been included as
2 of yet.

3 Q. Does Ontario Hydro have an inventory
4 of potential sewage control plant sites in Ontario that
5 could be used for this purpose?

6 A. No, I do not.

7 Q. Is this an area that you intend to
8 assess from an inventory point of view?

9 A. I think it is important to watch the
10 industry in terms of both the technical potential and
11 the economics of the industry, and it's something that
12 we will have to address in the near future if this
13 industry looks like it's going to move forward.

14 Q. The fact that many utilities are
15 operated by municipalities, does that offer you an
16 opportunity to do at least an inventory of potential
17 sites that produce this kind of gas as a starting point
18 at least to determine what the ultimate achievable
19 technology might be?

20 A. I think it is just a question of, do
21 they have the appropriate information that we can
22 determine how much can be produced at each site, I
23 think it is easy to do an inventory of Ontario. It's
24 just is there enough information to determine the
25 amount of megawatts that can be taken from the off-gas.

1 Q. You will agree that when compared
2 with landfill sites, the production of gas is not
3 limited in time as it is in the landfill. A landfill
4 eventually runs out of gas because of the decomposition
5 processes finishes at some point. That's not of the
6 same kind of restraint you see with sewage plants, is
7 it?

8 A. I think they are pretty full all the
9 time.

10 Q. The last question I want to ask you
11 about, you indicated if it were economic you would
12 consider a nuclear NUG. I assume that your answer
13 would be different if you were to take into account the
14 nuclear moratorium that presently exists with respect
15 to nuclear generation; do you agree with that?

16 MR. VYROSTKO: A. I think I probably
17 made that statement, and I guess the statement would be
18 based on the NUG proponent meeting all the regulations
19 and requirements of the Province of Ontario. And if
20 there was a moratorium, that would be obviously one of
21 the things that has to be considered in the development
22 of a project by the proponent.

23 Q. In any event, a nuclear reactor
24 probably won't meet your 6,600 btu's per kilowatthour
25 limit, will it?

1 A. I don't know that.

2 MR. MORAN: Thank you, panel.

3 Those are all my questions, Mr. Chairman.

4 THE CHAIRMAN: Thank you, Mr. Moran.

5 You are next, are you, Mr. Greenspoon?

6 MR. GREENSPOON: Yes.

7 THE CHAIRMAN: Just before you start, I
8 have one housekeeping matter to be put on the record.

9 Yesterday Mr. Starkman referred to the
10 draft guidelines, environmental guidelines for NUGs,
11 that was contained in Interrogatory 5.14.78, I don't
12 think we gave that a number.

13 Could we give that a number now.

14 THE REGISTRAR: 321.62.

15 THE CHAIRMAN: Thank you.

16 ---EXHIBIT NO. 321.62: Interrogatory No. 5.14.78.

17 THE CHAIRMAN: Mr. Greenspoon, are you
18 ready to go?

19 MR. GREENSPOON: Yes.

20 CROSS-EXAMINATION BY MR. GREENSPOON:

21 Q. Firstly, in volume 72, Mr. Snelson --

22 THE CHAIRMAN: Is there a page?

23 MR. GREENSPOON: Sorry. Page 13106.

24 [12:30 p.m.]

25 Q. Line 15, Mr. Snelson. We were

1 discussing what the cost of Darlington was per
2 kilowatt. And you said on line 15, 16:

3 I haven't got a figure right at my
4 fingertips. It's in the order of 2,000
5 to \$3,000 a kilowatt.

6 I have prepared a spreadsheet that I gave
7 to the clerk -- I guess I haven't given any to my
8 friends.

9 THE REGISTRAR: Is this to be made an
10 exhibit, Mr. Chairman?

11 THE CHAIRMAN: Yes, it is to be an
12 exhibit.

13 THE REGISTRAR: 349.

14 ---EXHIBIT NO. 349: Spreadsheet entitled "Darlington
15 Capital Cost".

16 MR. GREENSPOON: It's pretty simple
17 math --

18 THE CHAIRMAN: Just give us a chance to
19 get it in front of us.

20 MR. GREENSPOON: Sure. Hardly justifies
21 the expense of a spreadsheet, but....

22 Q. But basically we are looking at a
23 cost of Darlington at \$13.2 billion, four units of 881
24 megawatts, that's a total of 3,524. The cost per
25 megawatt is \$3.745 million. And divide that by a

1 thousand, you end up with about \$3,745 a kilowatt as
2 opposed to your answer which says between 2 and \$3,000
3 a kilowatt.

4 MR. SNELSON: A. I didn't intend to
5 indicate between 2 or \$3,000. I intended to indicate
6 of the order of 2 or 3,000.

7 Q. And what is the difference between
8 those?

9 A. This is \$3,745, which is of the order
10 of 3,000.

11 Q. Your answer is pretty clear on the
12 record, Mr. Snelson. I think you are splitting hairs,
13 but I won't debate it any further.

14 I just wanted to move on.

15 THE CHAIRMAN: Anyway Mr. Snelson, you
16 don't quarrel with the estimate of 3,700?

17 MR. SNELSON: I don't quarrel with his
18 figures, no. I would have come to the same answer too
19 if I had looked the figures up and done the arithmetic.

20 MR. GREENSPOON: Q. But you didn't have
21 it at your fingertips?

22 MR. SNELSON: A. I didn't have that
23 number at my fingertips.

24 Q. Now, I just wanted to ask you I
25 guess, panel, about some specific industries in

1 Northern Ontario. And I know you can't answer the
2 question specifically but I will give you the names and
3 you can give me a generic answer perhaps.

4 And that is Inco, Falconbridge,
5 E.B. Eddy, and Algoma Steel. So those are the big
6 users along the north shore of Lake Huron in
7 northeastern Ontario at least. And leaving aside the
8 pulp and paper industry and any other industries in
9 northwestern Ontario, is it your estimation that there
10 is waste heat now that isn't being used in cogeneration
11 at those industries?

12 MR. BROWN: A. Yes, there is.

13 Q. And is any of that waste heat in the
14 form of steam? That they are using steam in the
15 process or that they are a steam host?

16 A. In the names you have listed, yes.

17 Q. And is there any heat at those
18 industries that I have listed that isn't steam that is
19 being vented or wasted or being put up a stack?

20 A. Yes, there is.

21 Q. And have you looked at recovery
22 boilers in those processes at those industries to
23 recover that heat and boil water and turn a turbine?

24 A. You mean Ontario Hydro doing this?

25 Q. Yes.

1 A. Ontario Hydro has not.

2 Q. Have the industries looked at that?

3 Have you pointed out to them the possibilities of
4 recovery boilers. For example, at International Nickel
5 where they put out hundreds of thousands of tonnes up
6 their smoke stack every day, there is obviously a lot
7 of heat going up that stack and it's not in the form of
8 steam. Has it been suggested to Inco that perhaps they
9 could recover some of that heat?

10 A. In terms of waste heat that is not
11 steam, it is a little more difficult than just running
12 it through a heat recovery boiler. And there are
13 technologies that are emerging to look at this and they
14 are not in a stage that are commercially applicable in
15 North America. We are looking at these technologies
16 and there is potential at these sites for this
17 technology to incorporate the waste heat recovery but
18 it is highly capital intensive.

19 Q. So they are not in your forecast I
20 take it from your answer?

21 A. If it is not steam, no, they are not
22 in my forecast.

23 Q. Are any of these industries that I
24 named possible providers of dispatchable electricity
25 through cogeneration?

1 A. Normally high-efficiency cogeneration
2 does not allow for dispatchability. The running of the
3 plant is driven by the steam requirements of the
4 facility rather than the requirements of Ontario Hydro.

5 Q. Yes, is that the answer to the
6 question though? Is there any dispatchable possibility
7 at any of these industries?

8 A. At every NUG site it is possible to
9 design a project that adds dispatchability.

10 Q. Are you reluctant to answer the
11 question because of confidentiality or you just don't
12 think there is any.

13 A. No, I am saying if it is high
14 efficiency there is limited availability for dispatch.
15 Under our new guidelines, if they follow those, yes,
16 those industries can take advantage of that and provide
17 dispatchability.

18 Q. Let's turn to northwestern Ontario or
19 at least all the pulp, talk about pulp and paper.
20 Would you agree - maybe this isn't your area but I
21 would think you should know - that the new technologies
22 in pulp and paper, especially recycled paper are much
23 less electricity intensive than the present method of
24 cutting the logs down and making pulp and paper out of
25 them? Is it in your forecast that we are going to be

1 using less electricity in the pulp and paper industry
2 in the future?

3 A. My forecast is based on steam use,
4 not electricity use. I believe there is a statement
5 that it's less energy intensive to use recycled paper
6 rather than virgin wood.

7 Q. I guess maybe Mr. Snelson you could
8 answer that then because what I am concerned about is
9 that in fact if that's true we are going to have even
10 more of a surplus in northwestern Ontario, if the pulp
11 and paper industry goes to recycled paper?

12 MR. SNELSON: A. Your question I think
13 goes to the load forecast, which would be Mr. Burke's
14 evidence on Panels 1 and 4. One has to recognize
15 though - and I am not an expert in this area - but one
16 has to recognize that there can be offsetting
17 technology trends.

18 You have talked about recycled paper
19 being used as a feedstock for paper and that using less
20 energy. We also are aware that there are technologies
21 that are proposed for the pulp and paper industry that
22 use more energy, more electrical energy, through a
23 process called thermal mechanical pulping, which has a
24 number of advantages, I understand. And this
25 technology tends to use more of the raw wood. I

1 understand it has some environmental advantages and
2 also produces a better quality product.

3 Q. We maybe have to await the outcome of
4 the environmental assessment on timber to see if there
5 are any trees left to make pulp out of.

6 A. I am only making the point that there
7 are other technologies that may have offsetting trends.

8 Q. All right. But aside from that,
9 electrical efficiency is the thing of the future and
10 industries have caught on and it's probable that with
11 the non-utility generation that you forecast in the
12 northwest that there is going to be a surplus; there is
13 more likely to be a surplus that we will use more,
14 industrially?

15 A. I couldn't comment on the effect,
16 overall effect on the load forecast.

17 Q. I have just a general question that
18 really doesn't fit in anywhere. I am wondering about
19 the public consultation process in your division. And
20 I guess there is a statement that Mr. Eliesen made
21 where he said that Hydro believes in exercising its
22 corporate responsibility in a way that helps its
23 customers in their communities. And I don't think that
24 you would disagree with that as being a Hydro
25 philosophy, to help the customers and the communities.

1 And my question is: When a proponent of
2 a non-utility generation projects comes to Ontario
3 Hydro, how are the people of the area and particularly
4 northern Ontario, where you agreed most of the projects
5 are, or at least in the past 70 per cent of the
6 projects have been, how do you get input from the
7 people of northern Ontario as to whether they would
8 favour one type of cogeneration project over another;
9 for example, a non-utility generation at an industry or
10 a hydraulic project? Or how do they weigh off each of
11 those against the other? What is the public
12 participation component in your division or do you wait
13 for environmental assessment hearings?

14 MR. VYROSTKO: A. No, we don't have a
15 public participation process that we manage within our
16 division. We expect the proponent to in fact involve
17 whatever community groups or whatever agencies are
18 necessary to have a project approved within the
19 jurisdiction that they have submitted a project forward
20 in. But it is not part of our process to do that.

21 MR. SNELSON: A. Maybe if I can add to
22 that. With respect to the strategic statements that
23 have been made with respect to preference for certain
24 technologies, the encouragement of non-utility
25 generation and hydraulic generation, those statements

1 are taking a part of the Demand/Supply Planning
2 Strategy; and throughout the process of preparing that
3 there were very extensive public consultation programs,
4 including northern communities, including interest
5 groups from the north --

6 Q. But those were generic, those were
7 not site specific?

8 A. Those were generic and led to the
9 strategy, yes.

10 Q. I guess the one particular project
11 that comes to mind is the Poplar Point on the Sturgeon
12 River on Lake Nipigon. You know that one, Mr. Brown,
13 do you? That's a 5.3 megawatt hydraulic project that
14 was before the courts and apparently the Ministry of
15 the Environment in its wisdom decided not to have an
16 environmental assessment, although the courts seemed to
17 indicate that they should have. Are you aware of that
18 project?

19 MR. BROWN: A. I believe it's under a
20 different name, but it is part of the inventory of
21 hydraulic sites in Ontario.

22 Q. Mr. Snelson, you were the person to
23 talk about transmission bottlenecks, I think, weren't
24 you?

25 MR. SNELSON: A. Yes.

1 Q. And I just wondered about a couple of
2 things. The northeastern upgrade, the environmental
3 assessment on the northeastern upgrade on the
4 transmission corridor, is that going to be of any
5 assistance to these non-utility generation problems
6 that you spoke of? Or is it relevant?

7 A. I am not sure which environmental
8 assessment it is you are referring to.

9 Q. Well, it is called the northeastern
10 upgrade, northeastern transmission upgrade.

11 A. I gave the evidence on transmission
12 for this panel. The person with the most detail is Dr.
13 Macedo on Panel 7.

14 Q. Sure, okay.

15 A. I could perhaps answer your question
16 but he would answer it better than I can.

17 Q. No, that's fair enough. That's good.

18 Just getting back to northwestern Ontario
19 for a minute in the area of transmission. You
20 certainly couldn't disagree, panel, that there won't be
21 an electricity deficit in northwestern Ontario in the
22 next 20 years?

23 A. That is not our current forecast.
24 Our current forecast is that there would be ample
25 generation in northwestern Ontario. I have seen

1 northwestern Ontario in the time that I have been
2 planning swing from surplus to deficit situations on an
3 unpredictable basis. And so while we don't forecast
4 that, I couldn't swear that that would not happen.

5 Q. So when you are upgrading your
6 transmission system as far as northwestern Ontario is
7 concerned, the idea is to get the electricity to
8 Toronto? You are not shipping electricity up there.

9 A. No, I think we see that the
10 integration of the northwest area, the northwestern
11 region, into the rest of the system as being a
12 long-term benefit to the system and a long-term benefit
13 to the area of northwestern Ontario.

14 Q. So you are saying that you are not --
15 Ontario Hydro is not planning to move electricity from
16 northwestern Ontario to southern Ontario?

17 A. That is our current plan.

18 Q. That is your current plan, to not do
19 that?

20 A. No, our current plan is that the
21 direction of flow on the improved transmission will be
22 predominantly from the west to the east.

23 Q. And from --

24 A. And that is why it is being built at
25 this time.

1 I do believe that in the long term the
2 improvement of the transmission between northwestern
3 region and the rest of the system is a benefit to the
4 system and specifically a benefit to northwestern
5 Ontario.

6 Q. But for now the loads are all going
7 south?

8 A. It is likely that for the period of
9 the Manitoba contract the flows will go from the west
10 to the east.

11 Q. Now, have you considered -- I guess
12 these will be major supply NUGs. Has Ontario Hydro
13 considered small non-utility generating facilities of
14 the size of about 1 megawatt for peak, where the
15 facility would be built and it would be used maybe
16 eight hours a year or --

17 THE CHAIRMAN: How many hours a year?

18 MR. GREENSPOON: Eight hours a year,
19 let's say. A very minimal amount of hours per year.
20 And it would only be used for peak. And obviously it
21 would be a major supply NUG.

22 Q. Has Ontario Hydro considered doing
23 that? For example, you would put one right in the
24 heart of the industrial electrical users area of
25 Ontario, a 1 megawatt major supply NUG.

1 MR. SNELSON: A. I don't believe we have.

2 Q. I am not sure if I asked you panel
3 this, it has been a couple of weeks - I went through
4 the transcript a few times but I didn't notice it -
5 about the, I think I did, I recall....

6 Anyway I will ask it again. It's a 5
7 kilowatt gas-fired generator that you would use in your
8 house, and it is made by Kohler in the United States.
9 And I understand it retails for around \$5,000 U.S.
10 Apparently it has a smart box in it so that when it is
11 not generating all your electricity, it has a capacity
12 of 5 kilowatts which will do the average, better than
13 average home. When it's not generating electricity,
14 when it doesn't need it's also heating your hot water,
15 and also heats your house.

16 Has Hydro investigated the possibility of
17 this type of a machine, this type of a unit coming on
18 the market in Canada?

19 MR. BROWN: A. We looked at that in
20 terms of what we call package cogeneration which will
21 range from your 5 kilowatts up to 5 megawatts all being
22 treated in a similar manner.

23 Q. But this would be something that a
24 fuel-switching incentive would apply to, I would say.
25 I would ask you for \$5,000 maybe Ontario Hydro should

1 think that this is a better way, don't even hook the
2 person up to the grid, it might be cheaper for Ontario
3 Hydro to allow a user to buy one of these units for
4 \$5,000 and maybe subsidize it.

5 A. We have done that in the past for a
6 larger unit.

7 Q. But not for a 5 kilowatt unit for one
8 house?

9 A. Nobody has approached us, no.

10 Q. Are you aware of this unit that I am
11 talking about that is made by Kohler?

12 A. I am aware of small Honda generators
13 of that size, not a heat recovery type generator of
14 that size.

15 Q. Has Ontario Hydro considered a
16 premium, and I am talking past avoided cost, I am not
17 talking about the 10 per cent or the 9 per cent, just a
18 premium over and above avoided cost because you say
19 that avoided cost includes all those other premiums for
20 natives and non-profit non-utility generators?

21 [12:40 p.m.]

22 MR. VYROSTKO: A. At the current time we
23 have not considered that.

24 Q. And I am talking about something over
25 and above what you are already giving out and you

1 haven't considered that?

2 A. We have not considered that.

3 Q. Now, before Mr. Eliesen made his
4 announcement several weeks ago, would you agree that in
5 the last year you have signed up more non-utility
6 generation than was in the 1991 forecast?

7 MR. BROWN: A. That's not true. We
8 haven't signed these up yet. At the current stage
9 there is 735 megawatts in-service and committed, and
10 those are actually falling short of my forecast of the
11 early stages of the 1990 NUG plan.

12 Q. 1991?

13 A. 1990.

14 Q. 1990.

15 In the last ten months you have signed up
16 ten projects for about 1,000 megawatts, haven't you?

17 A. Those are included in the 700 plus
18 some additional ones, that's correct.

19 Q. And would it be fair to say that
20 that's about the fastest 1,000 megawatts that Ontario
21 Hydro has ever produced or signed up or gotten in the
22 last quarter century?

23 A. In terms of signing up, I think it
24 probably set a record. In terms of going in-service I
25 am not sure of that yet.

1 Q. Well, just related to that. If you
2 could look at yesterday's transcript, Volume 75, page
3 13507, Mr. Snelson, line 10, you say there, after
4 megawatts, you say:

5 "...because we are already into
6 surplus capacity from a few years before
7 the year 2000 until about 2005."

8 So, can I take it from that statement
9 that we are already in a surplus capacity until 2005,
10 that what we are really here at this Demand/Supply Plan
11 Hearing is for projects after 2005, because we are in a
12 surplus until 2005?

13 MR. SNELSON: A. My comments at that
14 point were relating to figure 10 of Exhibit 320, which
15 was the overheads that we used for our direct evidence
16 for this panel, and that shows a surplus in capacity
17 for about the time that I indicated, and that is with
18 median load growth.

19 We also have to recognize that with
20 higher load growth that is possible, there could be
21 quite a considerably higher need and much earlier need.
22 So I think that we are here to look at both
23 circumstances.

24 Q. Okay. Now, again with risking
25 covering some ground that I have already covered, just

1 very quickly. You are paying the same buy-back rate
2 for cogeneration as you are for hydraulic, is that
3 roughly a true statement? Same premium.

4 MR. BROWN: A. If it's a high-efficiency
5 cogeneration, they would be the same.

6 Q. All right. And yet you would agree
7 that in terms of impacts on the environment, the
8 hydraulic has less impact? It's renewable.

9 At least let's forget about my first
10 statement that it has less impact on the environment.
11 It's certainly renewable whereas the cogeneration is
12 not?

13 A. Cogeneration can use renewable fuels
14 such as wood waste.

15 Q. I thought wood waste wasn't
16 cogeneration.

17 A. Wood waste is a fuel like natural gas
18 is a fuel.

19 Q. I thought you said that wood waste
20 was going to be dealt with as an alternative in Panel
21 8.

22 A. You are talking about biomass
23 harvesting techniques. Wood waste such as used in pulp
24 and paper mills is different.

25 Q. Let's forget about wood waste then.

1 Most of the cogeneration in this province
2 is not wood waste; most of it is natural gas?

3 A. That's correct.

4 Q. It's not a renewable fuel?

5 A. That's correct.

6 Q. And water is a renewable fuel?

7 A. Yes, it is.

8 Q. So why don't you pay more for water
9 than you do for natural gas? Why don't you pay for
10 more for hydraulic than you do for cogeneration?

11 A. In terms of our preference, they are
12 treated equally. And it's not just because it's
13 renewable fuel, you have to look at the whole aspect of
14 a small hydro facility. There could be some
15 environmental mitigation requirements.

16 Q. All right. Well, let's say we screen
17 all of those. We environmentally screen all of the
18 impacts of the hydraulic, and I guess we will get into
19 that maybe in the Hydraulic Panel. But let's assume
20 that it is a run-of-the-river hydraulic, that there is
21 no reservoir, or that the reservoir is minimal, why
22 wouldn't you pay more that?

23 MR. SNELSON: A. I think that the
24 thinking that went in the preference premium tried to
25 differentiate between preferred technologies and

1 non-preferred technologies. It was a reflection of the
2 opinions that were expressed through the discussions
3 with the public that we had, through the preparations
4 of a Demand/Supply Planning Strategy, and through that
5 process we recognized cogeneration, high-efficiency
6 cogeneration even if it uses non-renewable fuel as
7 being the preferred technology because that is the
8 highest efficiency way of using a non-renewable fuel.
9 We also recognized hydraulic generation as a being a
10 preferred technology based on the renewability of the
11 fuel and the recognition that the environmental
12 effects, while not negligible, were more localized and
13 provided that those could be acceptably managed, that
14 that was a preferred technology.

15 Q. Just turning to reliability for a
16 minute. Ontario Hydro has co-existed with non-utility
17 generations, Great Lakes Power, Peterborough Public
18 Utility Commission. Would it be fair to say that the
19 reliability of non-utility generation has been
20 demonstrated over the years? Would you agree with
21 that?

22 MR. BROWN: A. I think in terms of being
23 in existence it's been demonstrated and the life has
24 been demonstrated. It's difficult to say in
25 quantitative terms what their reliability has been.

1 Q. But in determining this premium, and
2 I don't want to belabour the point, this will be my
3 last try to get at it maybe from a different angle, but
4 you have got to compare it to some of the other
5 alternatives. You have got to compare it to nuclear
6 and coal. I would suggest to you, you should compare
7 it on performance.

8 Isn't it true that if we look at
9 Pickering "A", for example, and the costs of retubing,
10 Mr. Snelson, that really what we are doing is we are
11 putting non-utility generation up against coal at
12 Lambton. Isn't it true that Lambton is cheaper than
13 Pickering "A", and that's what we are having to stack
14 non-utility generation up against, is coal?

15 MR. SNELSON: A. I believe that you will
16 see in the later panels the comparison of coal versus
17 nuclear. Over most of its life, at least, Pickering
18 has been cheaper than Lambton, that comparison has been
19 done on a regular basis, and in fact --

20 Q. But let's say right now.

21 A. On a one year basis I don't think
22 it's a fair comparison because you have one unit
23 out-of-service at the moment for retubing, which is a
24 major procedure which we expect to do about once in the
25 life of the station. So I think the fairer comparison

1 is to compare on a lifetime base.

2 Q. Even leaving aside the issue of which
3 one is cheaper, Pickering "A" or Lambton, you can't
4 disagree that with the cost of acid rain and the cost
5 of global warming, that it would make sense for Ontario
6 Hydro to consider another premium for hydraulic
7 generation, small scale, especially small scale
8 hydraulic, river-run generation?

9 A. We haven't identified such a premium.
10 We have addressed the cost of acid gas control.

11 Q. Okay. Has Ontario Hydro ever had to
12 pay anything for repairs for a NUG?

13 MR. VYROSTKO: A. I don't believe so.

14 Q. No. And how much did Hydro pay to
15 retube Pickering?

16 MR. SNELSON: A. Having being caught out
17 once without numbers at my fingertips, I'm not going
18 to --

19 Q. Substantially more than nothing?

20 A. Substantially more than nothing.

21 However, I will say that the nuclear
22 costs which are used in avoided costs do include the
23 cost of retubing, and that is included in the avoided
24 cost calculation.

25 Q. Now, I don't know if this is before

1 my time because somebody told me about it, maybe it's
2 not. This is the off-the-shelf mini-hydel that Hydro
3 developed, maybe you know about that. The phrase or
4 the name that I was given was the "Tin Can Powerhouse".
5 Does that ring a bell with anybody on the panel?

6 MR. BROWN: A. Not by that name.

7 Q. Not by that name. Do you what I am
8 talking about? It had a Barber hydraulic turbine?

9 A. I believe there was two installed,
10 one in a remote community of Sultan --

11 Q. Sultan and Wasdell?

12 A. And the other one was Wasdell.

13 Q. That's right. So this was an
14 off-the-shelf mini-hydel that Ontario Hydro developed
15 or had developed and could install or have installed?

16 A. Hydro is looking at this technology
17 as a demonstration type project to lead the industry
18 into moving into that direction.

19 Q. Did you say Hydro is or was?

20 A. These, I believe, are early '80
21 projects.

22 Q. Right. And what happened to them?

23 A. They are in-service.

24 Q. Is the program still alive?

25 A. This was a demonstration project to

1 lead the industry, so the industry would consider such
2 projects.

3 Q. Just backing up for a minute. Are
4 they still being used has demonstration projects?

5 A. Well, since they are a hydraulic
6 facility, their life would be very long and those
7 facilities are still in service.

8 Q. And this was Ontario technology, the
9 Barber turbine is made in Ontario?

10 A. Yes, Niagara Falls.

11 Q. And are you demonstrating this?
12 Because my understanding was, the merit of this was
13 that it was the same unit that could be used in many
14 places; isn't that true?

15 A. That was the intent.

16 Q. It was an off-the-shelf unit, so you
17 wouldn't have to design it site-specific; isn't that
18 true?

19 A. No, there was still site preparation
20 that had to be done.

21 Q. But you could use the same unit,
22 basically, the same turbine?

23 A. The turbine, yes.

24 Q. Now, are you demonstrating this to
25 the First Nations in Northern Ontario, that they can do

1 this, that there is an off-the-shelf turbine at Barber
2 Turbine in Niagara Falls?

3 A. Remember, this was a demonstration of
4 this technology. The results of that were that this is
5 not very economical.

6 Our efforts right now are looking at any
7 technology in small hydro that is economic, not
8 necessarily mini-hydel.

9 Q. Okay, well maybe we will get into the
10 economics in a minute.

11 I just want to ask, how many Ontario
12 Hydro staff now are involved in developing small
13 hydraulic?

14 A. I think you have to refer to Panel 6
15 for that.

16 Q. Just getting back to the economics
17 for a second. In Volume 67, page 11990. Mr. Vyrostk,
18 I think.

19 I can probably finish by quarter after
20 one.

21 THE CHAIRMAN: No, unless you have to
22 make a plane or something, I would just as soon take
23 the normal time off.

24 MR. GREENSPOON: Okay, it doesn't to me.
25 I will just finish this point.

1 THE CHAIRMAN: All right.

2 MR. GREENSPOON: Q. Mr. Vyrostko, you
3 are saying at line 7:

4 "...if we look at Ontario Hydro, it
5 has, in fact, matured as an industry and
6 has focused on building large facilities.
7 Its structure, its expertise is in
8 building major plants.

9 And so, therefore, to have a utility
10 like Ontario Hydro moving in to build a
11 small plant is not very cost-effective."

12 And then again on page 12007, line 15, I
13 think this is you, Mr. Brown -- or Mr. Snelson. Mr.
14 Snelson, referring to Mr. Vyrostko's statement:

15 "The second one is small hydro in
16 that, as Mr. Vyrostko has already said,
17 Ontario Hydro is not very well structured
18 to undertake small projects effectively."

19 So, really what it comes down to is the
20 preferred option, the one that you say you haven't
21 looked at to give a premium to, the hydraulic option
22 that has little or less environmental impacts, this is
23 the one that Ontario Hydro can't do. You are not
24 structurally set up to do the preferred option. The
25 best thing we can do, you can't do it; isn't that

1 right?

2 MR. VYROSTKO: A. I think from a
3 non-utility generation perspective that's how we are
4 structured.

5 Q. That wasn't the question. You don't
6 do it. You did it in 80s. We heard that from Mr.
7 Brown, you set up a demonstration project, he says.
8 You are not doing it.

9 A. We are not -- we, as Ontario Hydro,
10 are not doing small projects.

11 MR. GREENSPOON: I have got another ten
12 minutes.

13 THE CHAIRMAN: We will adjourn now until
14 2:30.

15 THE REGISTRAR: This hearing will adjourn
16 until 2:30.

17 ---Luncheon recess at 12:58 p.m.

18 ---On resuming at 2:34 p.m.

19 THE REGISTRAR: Please come to order.
20 This hearing is now in session. Be seated, please.

21 THE CHAIRMAN: Mr. Greenspoon.

22 MR. GREENSPOON: Thank you, Mr. Chairman.

23 Q. Just a few more points, panel. I
24 wanted to go over some of the general, as I see them,
25 just review with you and maybe from a different

1 perspective from the point of view of at least some of
2 these from northern Ontario the major benefits of small
3 hydraulic and high-efficiency cogeneration in northern
4 Ontario.

5 You would agree that in most cases, at
6 least as compared to major construction projects as you
7 have described them in your evidence earlier, the
8 megaprojects, that small hydraulic and cogeneration
9 have a faster lead time? Is that fair to say?

10 MR. VYROSTKO: A. That's fair to say.

11 Q. And they also provide a flexibility
12 of fuel options? Wood waste, whatever fuel the steam
13 generator is using, hydraulic?

14 A. They provide other fuel sources than
15 typical major supply --

16 Q. Nuclear and coal.

17 For the most part they are either
18 renewable or they are high efficiency as we said. We
19 are using in Ontario 29 per cent uranium, 30 per cent
20 coal; is that roughly....

21 MR. SNELSON: A. I am not sure what your
22 percentages are, how they are calculated.

23 Q. In terms of the mode of generation.

24 A. In terms of the electrical energy
25 that is generated --

1 Q. No, in terms of the fuel, the mix.
2 Our mix is about 29 per cent uranium, 35 per cent coal
3 right now?

4 A. Is that in capacity or in energy?

5 Q. In capacity.

6 A. That's given in the existing system
7 chapter but it is....

8 Q. In any case with NUGs we are talking
9 about renewability or high efficiency; you agree with
10 that?

11 MR. VYROSTKO: A. That's correct,
12 although high efficiency uses non-renewable fuels.

13 Q. And the technologies are proven, they
14 are very reliable?

15 A. In most of the situations. For
16 instance, landfill gas is a reasonably new technology
17 and so that is not quite as proven as, for instance,
18 cogeneration is in using natural gas.

19 Q. And in terms of northern Ontario
20 again, geographically we have a regional diversity with
21 non-utility generation as opposed to a major
22 megaproject where it ends up in one area? There is a
23 regional diversity to a NUG?

24 A. Yes. Anywhere in the province, that
25 would give it that regional credit, yes.

1 Q. And basically Ontario Hydro pays for
2 performance with a non-utility generation. There is
3 no -- there is a minimal risk, there is no risk of cost
4 overruns, breakdowns, those risks are not borne by
5 Ontario Hydro?

6 A. That's correct.

7 Q. And because of the point before that
8 I made, because of regional diversity, there tends to
9 be regional spin-offs, economic and employment
10 spin-offs from a non-utility generator?

11 A. Yes, I think there are spin-offs
12 associated with a non-utility generator just like there
13 would I think be spin-offs with any other type of
14 activity.

15 Q. And we can often with a non-utility
16 generation, with a NUG, you can often match a load to a
17 site. You can put your generator in proximity to where
18 it's needed?

19 A. That's one of the advantages.

20 Q. That's another advantage. All right.

21 Now I think you answered this question
22 before, but just to reiterate: You at Ontario Hydro
23 are not doing any of these things, you are facilitating
24 other people to do them, you are contracting them out,
25 but you don't do it any more?

1 A. Don't do what any more?

2 Q. Non-utility, you don't do any of this
3 non-utility generation?

4 A. Well, I guess we never did
5 non-utility generation before.

6 Q. All right. I am using it in its
7 broadest sense. You are not doing any small hydraulic
8 any more?

9 A. We have a few small hydro projects
10 under way, for instance, Lake Gibson in the Niagara
11 Region.

12 Q. And how big is that?

13 A. I think around 6 megawatts. So, it
14 is not that we aren't doing any, we are doing some
15 selective projects.

16 Q. Is that the only one you have?

17 MR. SNELSON: A. There are some other
18 hydraulic projects which will be discussed in Panel 6
19 such as Big Chute, which is a redevelopment of a
20 hydraulic site.

21 Q. And how many megawatts is that?

22 A. I would hazard a guess at about 10 or
23 12 megawatts.

24 Q. So under 5 megawatts you are not
25 doing any?

1 MR. BROWN: A. We have existing
2 facilities under 5 which we discuss in Panel 6 which
3 are under the Sharp program to enhance the performance
4 of those facilities.

5 Q. But you are not developing any under
6 5; you are contracting them out under your NUG program?

7 A. Other than these Sharp enhancements.

8 Q. And as far as cogeneration, you are
9 not going in, you said you won't go in and do a
10 cogeneration?

11 MR. VYROSTKO: A. We have not done that,
12 that's correct.

13 Q. Now isn't it true that you have left
14 the field open for other utilities to go in and do
15 that?

16 A. What we have said is that we would
17 encourage utilities to look at opportunities within
18 their own franchise areas; and if they have
19 opportunities for non-utility generation, that they
20 proceed with them, if it made sense.

21 Q. What about at the McDonnell Douglas
22 plant in Malton where TransAlta from Alberta went in
23 and put a cogenerator in? And TransAlta is a utility
24 in Alberta and they came into Ontario and they put a
25 cogenerator at McDonnell Douglas in Malton and now they

1 are selling electricity back to you and making money at
2 it? Why didn't you go in there and do it?

3 A. I think as we said before, we have
4 not seen ourselves going into industrial facilities and
5 setting up an operation in partnership with an
6 industrial site to do a project. We have never done
7 that in the past; and at this time, we don't see that
8 as being necessarily of benefit to us if we can have
9 other people do that. And right now our non-utility
10 generation program allows that to happen with the
11 various benefits to both ourselves and the developers.

12 Q. It is 170 megawatts at McDonnell
13 Douglas.

14 A. I believe it is about 100 megawatts.

15 Q. My figures are 170. Let's say it's a
16 hundred. And a utility from Alberta can come in here
17 to Ontario and make it pay and you can't do it?

18 A. I don't think that we necessarily
19 said we can't make it pay. I think what we said is
20 that our business has always been to provide major
21 facilities and to transmit and distribute power within
22 the province.

23 Q. And likewise at the Ottawa Health
24 Sciences Building, 67 megawatts, TransAlta again went
25 in there and put a cogenerator in there; and they are

1 selling it back to you and they are making money right
2 here in the Province of Ontario, from Alberta they
3 came.

4 A. That's correct.

5 Q. So basically what you said in your
6 direct evidence that Ontario Hydro is structurally
7 incapable of doing things like this?

8 A. I guess what I said in direct
9 evidence was that Ontario Hydro has basically developed
10 its strength building large-scale projects that in fact
11 bring advantages to the province. And because we have
12 built large-scale projects, we haven't gone after the
13 small ones, and that has been an opportunity now that
14 the private sector can go after. And so we are leaving
15 it up to the private sector at this time to go after
16 the smaller projects.

17 Q. How does that reconcile with the
18 demand management program? If you are structurally
19 incapable of doing these small hydraulic and small
20 cogenerating projects, how can you be structurally
21 capable of doing demand management which is also small
22 scale?

23 A. I guess I can't speak in detail with
24 respect to some of the demand management programs, but
25 I believe Ontario Hydro is a utility that serves

1 customers; and I think therefore as long as we are
2 dealing with specific initiatives with customers, then
3 we are appropriately situated to do that.

4 Q. Well, I would suggest just in closing
5 that it's probably a mistake for Ontario Hydro not to
6 have gone into McDonnell Douglas and the Health
7 Sciences Building in Ottawa. Wouldn't you agree?

8 A. No, I would not.

9 MR. GREENSPOON: You would not.

10 Okay, those are all the questions I have.

11 Thank you.

12 THE CHAIRMAN: Mr. Klippenstein, you are
13 next?

14 MR. KLIPPENSTEIN: Thank you, Mr.
15 Chairman.

16 Mr. Chairman, I confess that the scope of
17 today's cross-examination is still being determined. I
18 understand that Exhibit 344 was filed recently,
19 yesterday perhaps, that somewhat defines to what degree
20 the subjects that concern Pollution Probe will be dealt
21 with in this panel as opposed to another panel, in
22 Panel 8.

23 THE CHAIRMAN: 344 did you say?

24 MR. KLIPPENSTEIN: Yes.

25 THE REGISTRAR: That was prefiled, Mr.

1 Chairman.

2 THE CHAIRMAN: Have we got it?

3 MR. B. CAMPBELL: It is the alternative
4 energy review that we filed recently.

5 MR. KLIPPENSTEIN: It looks something
6 like that.

7 THE CHAIRMAN: Yes, I have seen it. You
8 intend to refer to it?

9 MR. KLIPPENSTEIN: I don't propose to
10 refer to it and I don't intend that you need to have a
11 look at it.

12 My point is that some of the matters that
13 I intended to cross-examine today, I think, subject to
14 perhaps comments from Mr. Campbell or the panel, will
15 be best handled by Panel 8; in fact, perhaps most of
16 the material may be better handled in Panel 8. There
17 was a little bit of confusion and difficulty sorting
18 the issues out there.

19 That goes for the panelists as well. If
20 you feel a question is better directed to Panel 8, feel
21 free to so comment.

22 CROSS-EXAMINATION BY MR. KLIPPENSTEIN:

23 Q. I take it from the discussion so far
24 and from particularly Exhibit 344, that Ontario Hydro
25 still considers the incineration of municipal solid

1 waste as an acceptable and viable alternative for the
2 production of electricity?

3 MR. BROWN: A. It is our opinion that
4 the technology is proven and can provide electricity;
5 and if a facility obtains approval, we are willing to
6 buy electricity from that facility.

7 Q. And the effect of the present
8 government ban on these facilities is merely that you
9 expect some delay in the development of these
10 facilities; is that correct?

11 A. No, I think the ban is a very good
12 step in enforcing recycling and I think it's a needed
13 step. I guess our position is we are not sure if the
14 recycling will be enough and that other communities,
15 such as Europe and the United States, who have
16 successful recycling programs still consider this an
17 option.

18 At this time in the forecast of
19 non-utility generators, we are looking at this as a
20 future option; and if it's an unnecessary option, we
21 will think about removing it in the future. Right now
22 it is an open option.

23 Q. And would you agree that there is an
24 inverse relationship to a point between the success of
25 recycling programs and the success of municipal solid

1 waste incinerators? In other words, the more materials
2 are removed from the waste stream, the more difficult
3 it is to create an incinerator that is economically
4 viable?

5 A. No, I think the direction in this
6 business is to combine the two efforts into a central
7 facility where the recycling is done as a fuel enters
8 the plant and then the incineration is what's left
9 over.

10 Q. Would you agree that if a very
11 successful recycling program or set of programs is in
12 place, that removes -- pick any number, 50 per cent of
13 the waste stream or the waste from the waste stream,
14 that requires the remaining waste to be collected from
15 a larger area in order to make a particular incinerator
16 viable? Is that fair?

17 A. If the sizes remain the same, that's
18 correct.

19 Q. And can the size of the incinerators
20 be reduced in that situation, with them still remaining
21 economically viable?

22 A. The economics of MSW is really driven
23 by the price of the tipping fee; and if the tipping fee
24 goes up, then the size that is economical will go down.

25 Q. And why as I understand the evidence

1 from Hydro is it the case that smaller communities are
2 not economically hospitable to an incinerator if what
3 you say is true?

4 A. It's mainly because the tipping fees
5 in smaller communities are a lot smaller than they are
6 say in Toronto; and the other thing is they have more
7 access to landfill opportunities than a constrained
8 environment like greater Toronto.

9 Q. If I can focus for a moment on some
10 of the basic assumptions in your projection of waste
11 from or energy from municipal waste incineration, one
12 of the assumptions - and correct me if I'm wrong - is
13 that 45 tonnes of municipal waste will yield 1 megawatt
14 of electrical capacity. I say 45, I believe some of
15 the material says somewhere between 40 and 50. That's
16 one of the key assumptions.

17 A. Yes, I think that's in the ballpark.

18 Q. A second assumption is that
19 communities with populations over 50,000 generate
20 enough garbage within a small area to make an
21 incinerator feasible; is that one of the key
22 assumptions as well?

23 A. Yes, it is.

24 Q. Why is that assumption necessary if
25 what you just mentioned to me is true about smaller

1 communities supporting an incinerator?

2 A. I think my point was that a small
3 community that doesn't have landfill site opportunities
4 could have a very economic MSW incinerator. It is just
5 that in Ontario a lot of the small centres are in
6 remote parts of the province where landfill is not a
7 problem and therefore the tipping fees are very small
8 making them uneconomic.

9 DR. CONNELL: Mr. Klippenstein, what was
10 the equivalence again, if I may ask you to repeat the
11 figure?

12 MR. KLIPPENSTEIN: 50,000 is the figure.

13 DR. CONNELL: 50,000 units of what?

14 MR. KLIPPENSTEIN: That's a reference to
15 the population or community size.

16 DR. CONNELL: I'm sorry, the one before
17 that.

18 MR. KLIPPENSTEIN: Sorry, that was 45
19 tonnes will yield 1 megawatt of electrical capacity.

20 DR. CONNELL: In what time period?

21 MR. BROWN: Per day.

22 DR. CONNELL: Thank you.

23 MR. KLIPPENSTEIN: 45 tonnes per day I'm
24 sorry, yes.

25 Q. Are those assumptions, the 45 tonnes

1 per day generating 1 megawatt and the 50,000 population
2 threshold, the basic assumptions in the projection?
3 Are there any others that are missing?

4 MR. BROWN: A. We have included a 35 per
5 cent recycling effort and we do treat the areas outside
6 Toronto a little bit differently than Toronto itself in
7 terms of collectability of the MSW.

8 Q. And how do you treat them
9 differently?

10 A. I think we would expect a greater
11 chance of a project going in in a larger population
12 centre.

13 Q. For the reasons you mentioned before?

14 A. Yes.

15 Q. Is there any other reason why you
16 would expect that, other than what you have just
17 mentioned?

18 A. None in the forecast.

19 Q. Can I ask a few questions about the
20 assumption of 45 tonnes per day producing 1 megawatt.

21 Do any operating incinerators in Ontario
22 actually achieve that proportion, do you know?

23 A. They all have capacity greater than
24 that.

25 Q. I'm not really referring to capacity.

1 I'm talking about actual production; in other words,
2 using 45 tonnes producing 1 megawatt.

3 A. I don't have that information. It's
4 probably provided in a reference in the 1990 NUG plan
5 or in Exhibit 344.

6 Q. Now the only references that I am
7 aware of contained in the 1990 NUG plan are a report
8 from December of 1989 entitled "Energy from Municipal
9 Solid Waste Issues" and a four-page report by Mr.
10 Rosson, I believe.

11 [2:55 p.m.]

12 As far as I am aware that information is
13 not contained in those reports. I will check that.
14 Other than what is in those reports and the NUG plan,
15 you wouldn't have any information, and I guess in
16 Exhibit 344, you wouldn't have any information about
17 which plants in Ontario actually operate on that
18 assumption or meet that assumption; is that correct?

19 A. That's correct.

20 Q. What about broadening the net a bit
21 and asking about Canada. Do you have any information
22 about how many plants in Canada meet that 45 tonnes per
23 day per megawatt production level?

24 A. That will be, if it is provided, it
25 would be in Exhibit 344, or reference, the two

1 references in the 1990 NUG plan.

2 Q. I take it that those might be
3 appropriate subjects for Panel 8, as well; is that
4 correct?

5 A. The determination of an existing
6 facility?

7 Q. The assumption of the amount of waste
8 required to produce a megawatt, for example. I know
9 they are dealt with extensively in Exhibit 344 which
10 was just produced a day or two ago, and I am just
11 wondering whether they can also be addressed in Panel
12 8?

13 A. I think since Exhibit 344 was done
14 after I did my forecast, if you want to talk to their
15 assumptions you have to wait for Panel 8.

16 In terms of the assumptions I used in the
17 forecast, I used Reference No. 2 for the 1990 NUG plan.
18 I will have to find in the report where that is found.

19 Q. Okay. Well, in your forecast then,
20 is it fair to say that your basic document would have
21 been Reference No. 2, which is the December 1989
22 document?

23 A. That's correct.

24 Q. And that was a response to Pollution
25 Probe's Interrogatory 5.19.4.

1 THE CHAIRMAN: Just hold on. 5.19.4?

2 MR. KLIPPENSTEIN: That's correct.

3 THE CHAIRMAN: Has that been referred to
4 before?

5 THE REGISTRAR: I am just checking.

6 No, that will be 321.63.

7 THE CHAIRMAN: Thank you.

8 ---EXHIBIT NO. 321.63: Interrogatory No. 5.19.4

9 MR. KLIPPENSTEIN: Q. I take it that you
10 don't know whether any incinerators in Canada meet your
11 assumption of 45 tonnes per day for a megawatt?

12 MR. BROWN: A. I don't have the
13 information at my fingertips, no.

14 Q. Do you know where you obtained that
15 assumption? What is the source of that assumption?

16 A. It would have been based on Reference
17 No. 2 in the 1990 NUG plan, plus any proposals that we
18 had received at the time from other areas in the
19 province.

20 Q. Proposals meaning municipalities or
21 project proponents? What sort of proposals would these
22 be?

23 A. I am not sure if the proponent is a
24 municipality or private individual. We had six or
25 seven MSW proposals before us when we did the 1990 NUG

1 plan.

2 Q. And those are the sources of your
3 information or form part of the source of your
4 information for this assumption; is that right?

5 A. That's correct.

6 Q. Would it be fair to say that that
7 assumption is key to your forecast? That is a key
8 assumption, the 45 --

9 A. Well, if you change the 45 you will
10 definitely get a different answer in terms of the
11 capability.

12 I may want to add, if you turn to page
13 30, the number 45 is quoted in the second paragraph,
14 Section 8 of that report.

15 THE CHAIRMAN: Hold it. Where are we
16 now? I'm sorry.

17 MR. BROWN: This is the 1990 NUG plan,
18 Reference No. 2, which is in the interrogatory just
19 referenced.

20 THE CHAIRMAN: That's the Ontario Hydro
21 Energy from Municipal Solid Waste, Mechanical
22 Equipment, Engineering Department?

23 MR. BROWN: Correct. On page 30 of that
24 report, the second paragraph says:

25 In general, as a rule of thumb, to

1 produce one megawatt of power requires 45
2 tonnes per day of refuse capacity.

3 MR. KLIPPENSTEIN: Q. And that rule of
4 thumb you obtained from the six or seven proposals that
5 you had --

6 MR. BROWN: A. I am not the author of
7 this report. These are people in Ontario Hydro who
8 have done a lot more research into this than I have to
9 come up with this number. This is their findings from
10 their work.

11 Q. Is there any way I can find out what
12 is the basis for their rule of thumb as they refer to
13 it?

14 Can you undertake to inform me what
15 information they relied on to come to that assumption?
16 Is that possible?

17 MR. B. CAMPBELL: It's clear I think from
18 your previous questions that the members of this panel
19 don't have, at least here, the background information
20 to support that 45 tonne per megawatt figure and we are
21 prepared to give an undertaking to provide information
22 supporting that figure.

23 THE CHAIRMAN: All right. No.?

24 THE REGISTRAR: 322.23.

25 THE CHAIRMAN: Thank you.

1 ---UNDERTAKING NO. 322.23: Ontario Hydro undertakes to
2 give background to support the 45 tonne
3 per day per megawatt capacity assumption
4 for municipal solid waste and whether any
 incinerator in Canada meets that
 assumption.

5 MR. KLIPPENSTEIN: Thank you.

6 Q. If you have any information - this is
7 following up on my previous question on the similar
8 topic - if you have any information as to whether or
9 not any incinerators in Ontario or Canada actually meet
10 that, would you undertake to tell me?

11 MR. BROWN: A. I think we can add that
12 to the undertaking.

13 Q. Thank you.

14 MR. B. CAMPBELL: Just so we are clear in
15 giving this undertaking, we are not volunteering to do
16 a comprehensive survey across Canada. What we are
17 saying is we will go back and see what we relied on,
18 including knowledge of existing incinerators in putting
19 forward that 45 tonne per megawatt figure.

20 MR. KLIPPENSTEIN: That's fair enough.
21 Thank you.

22 Q. Are there any support programs or
23 financial inducements which Hydro makes available to an
24 incinerator or a proposed incinerator of municipal
25 solid waste? I take it it wouldn't be applicable now

1 because of government's policy, but that either existed
2 before the policy or might resume should such policy
3 change.

4 MR. BROWN: A. It's less than 5
5 megawatts it would fall under our standard rates for
6 renewable projects, which means it qualifies for the
7 Option 2 or Option 3. And if it's greater than 5, it
8 would qualify for the 10 per cent premium.

9 If it's load displacement it might
10 qualify for financial assistance. If they are looking
11 at assistance in performing a prefeasibility study or
12 feasibility study, we may assist them as well.

13 Q. Are there any guidelines that apply
14 to such -- I guess that's special consultant study
15 funding, is that what you are referring to?

16 A. That's correct.

17 Q. Are there any particular guidelines
18 that apply to that that would tell me the likelihood of
19 obtaining it?

20 THE CHAIRMAN: Did I hear you say that if
21 you have less than 5 megawatts you don't get the
22 premium, the 10 per cent premium?

23 MR. BROWN: Sorry. You do get the
24 premium, it's in Option 2 of the standard rates. But
25 he also qualified for Option 3 which is the front-end

1 loading of Option 2.

2 MR. KLIPPENSTEIN: Q. I will try and
3 repeat my question. Can you tell me, are there any
4 program guidelines or similar guides to tell me how or
5 what criteria are applied to such consultant funding?

6 MR. BROWN: A. There is a program
7 document on consultant study assistance, and I believe
8 it may be in several other interrogatories that I have.
9 5.4.3.

10 THE REGISTRAR: 5.4...?

11 MR. BROWN: 3.

12 That interrogatory has both the financial
13 assistance and the consultant study assistance
14 programs.

15 MR. KLIPPENSTEIN: Thank you.

16 THE CHAIRMAN: Just a moment. We will
17 see if it needs a number.

18 THE REGISTRAR: That will be 321.64.

19 THE CHAIRMAN: Thank you.

20 ---EXHIBIT NO. 321.64: Interrogatory No. 5.4.3.

21 MR. KLIPPENSTEIN: Q. If I could ask you
22 some very general questions about incineration of
23 municipal waste. Would you agree that typically the
24 energy obtained from the incineration of a particular
25 type of municipal waste - and I am recognizing I am

1 speaking generally here - is less than the energy that
2 is saved when waste is recycled?

3 MR. BROWN: A. I am not aware of the
4 differences of those two.

5 Q. You obtain a certain amount of energy
6 when you burn waste?

7 A. That's correct.

8 Q. If you instead recycled that waste so
9 you didn't have to make that product again -- let me
10 use an example. Let me use an example of a sheet of
11 paper. If I burn this piece of paper I would obtain a
12 certain amount of energy. If instead of burning this
13 paper I reused it, I would save the energy required to
14 make another sheet of paper.

15 A. There would be energy involved in the
16 recycling of it in terms of de-inking and processing
17 that to produce another blank piece of paper.

18 Q. That's correct.

19 A. I can't compare that, the energy to
20 do that versus the energy that we would get from
21 burning it.

22 Q. Let me ask you that specifically.
23 Can you say with respect to paper, as a general rule,
24 that the energy obtained from burning paper is more or
25 less than the energy that is saved by not having to

1 produce another sheet of paper, amount of paper, less
2 the amount of energy required to recycle it?

3 A. I can't comment on that.

4 Q. Is that because you don't know or is
5 the question too general?

6 A. I am not aware of the energy consumed
7 during recycling or those savings that would be in fact
8 happening during recycling. That is a different
9 process.

10 Q. Has Hydro done any studies or
11 reviewed the literature with respect to the question of
12 whether incineration of waste is, from a global energy
13 point of view, more or less efficient than recycling?

14 A. I don't believe Hydro would be. I
15 believe the proponent wishing to do such a project
16 would have to address these issues.

17 Q. And so for purposes of this plan,
18 Hydro doesn't say and hasn't studied whether or not
19 incineration is better than recycling?

20 A. I guess our position on incineration,
21 that electricity is a by-product. If somebody has a
22 need to incinerate, we don't question his need or the
23 approval process. If he does the approval process and
24 gets approved, we are willing to buy the electricity.
25 That's a small part of the project, the electricity

1 portion. The major part of the project is the
2 incineration.

3 Q. Would it not be appropriate, since
4 this is both a demand and a supply plan of energy, to
5 actually take into account the cost and the benefits of
6 both sides of the equation; in other words, the cost of
7 foregoing recycling in order to burn the waste?

8 MR. B. CAMPBELL: Well, with respect, I
9 think the witness has answered the question as to
10 whether or not at least to the best of his knowledge
11 Ontario Hydro has done such a study. I think the
12 consequences, if any, that flow from that, I would ask
13 my friend to leave to argument. The factual matter has
14 been dealt by the witness.

15 MR. KLIPPENSTEIN: That's fair enough. I
16 withdraw the question.

17 Mr. Chairman, most of my other questions
18 actually deal with matters in Exhibit 344, and I
19 understand they are actually better dealt with in Panel
20 8, and therefore that may be all my questions for this
21 panel actually today.

22 THE CHAIRMAN: All right. I take it that
23 you are satisfied that the questions you do want to ask
24 will be appropriate for Panel 8?

25 MR. KLIPPENSTEIN: I base that on Exhibit

1 344, which is a fairly comprehensive treatment of
2 municipal incineration.

3 THE CHAIRMAN: Let me ask Mr. Campbell.

4 I take it 344 is the proper subject
5 matter for cross-examination in Panel 8?

6 MR. B. CAMPBELL: Yes, it is, Mr.
7 Chairman. As we have explained at various stages
8 throughout these proceedings, to the extent that there
9 are non-utility generation policies that Hydro is or is
10 not pursuing that could lead to more or less use of
11 alternative energy generation technologies, the policy
12 framework within which that could take place is a
13 proper matter for this panel. But in terms of the
14 evaluation of the technologies themselves, apart from
15 dealing with the matters generally, as has been the
16 case with this panel, we expect to be dealing with that
17 matter in more detail in Panel 8.

18 I have spoken to Mr. Klippenstein about
19 this just briefly before we started this afternoon, and
20 if his questions have to do with, for instance, the
21 output of various emissions from incineration
22 technology, that sort of thing, then the people that
23 can speak to the combustion process, controls, all of
24 those matters, certainly Panel 8 will be better
25 equipped to deal with that, and generally with the

1 nature of the technologies that are covered in that
2 report. It is going to be witnessed in Panel 8.

3 MR. KLIPPENSTEIN: I confess that I find
4 some of the materials in Exhibit 344 quite broad and I
5 don't know how to deal with them, having just received
6 some of that material. However, I think that it sounds
7 like I will be able to deal with them in that panel,
8 therefore I will leave it at that.

9 THE CHAIRMAN: Thank you.

10 MR. KLIPPENSTEIN: Those are my
11 questions.

12 THE CHAIRMAN: Thank you.

13 The next I believe is Energy Probe, which
14 counsel is coming in from out of town tomorrow.

15 Anyone here who would like to
16 cross-examine? Otherwise we will have to adjourn for
17 the day.

18 No volunteers? Very well then, we will
19 adjourn until tomorrow morning at ten o'clock.

20 THE REGISTRAR: This hearing will adjourn
21 until ten o'clock tomorrow morning.

22 ---Whereupon the hearing was adjourned at 3:12 p.m., to
23 be reconvened on Wednesday, October 30, 1991, at
24 10:00 a.m.

25 JAS/KM [c. copyright 1985]

E R R A T A
and
C H A N G E S

To: Volume 75

Date: Monday, October 29th, 1991.

Please note that Exhibit 343 was filed by the Coalition of Environmental Groups and not by Ontario Hydro as reported in Volume 75.

We apologize for this inconvenience.

